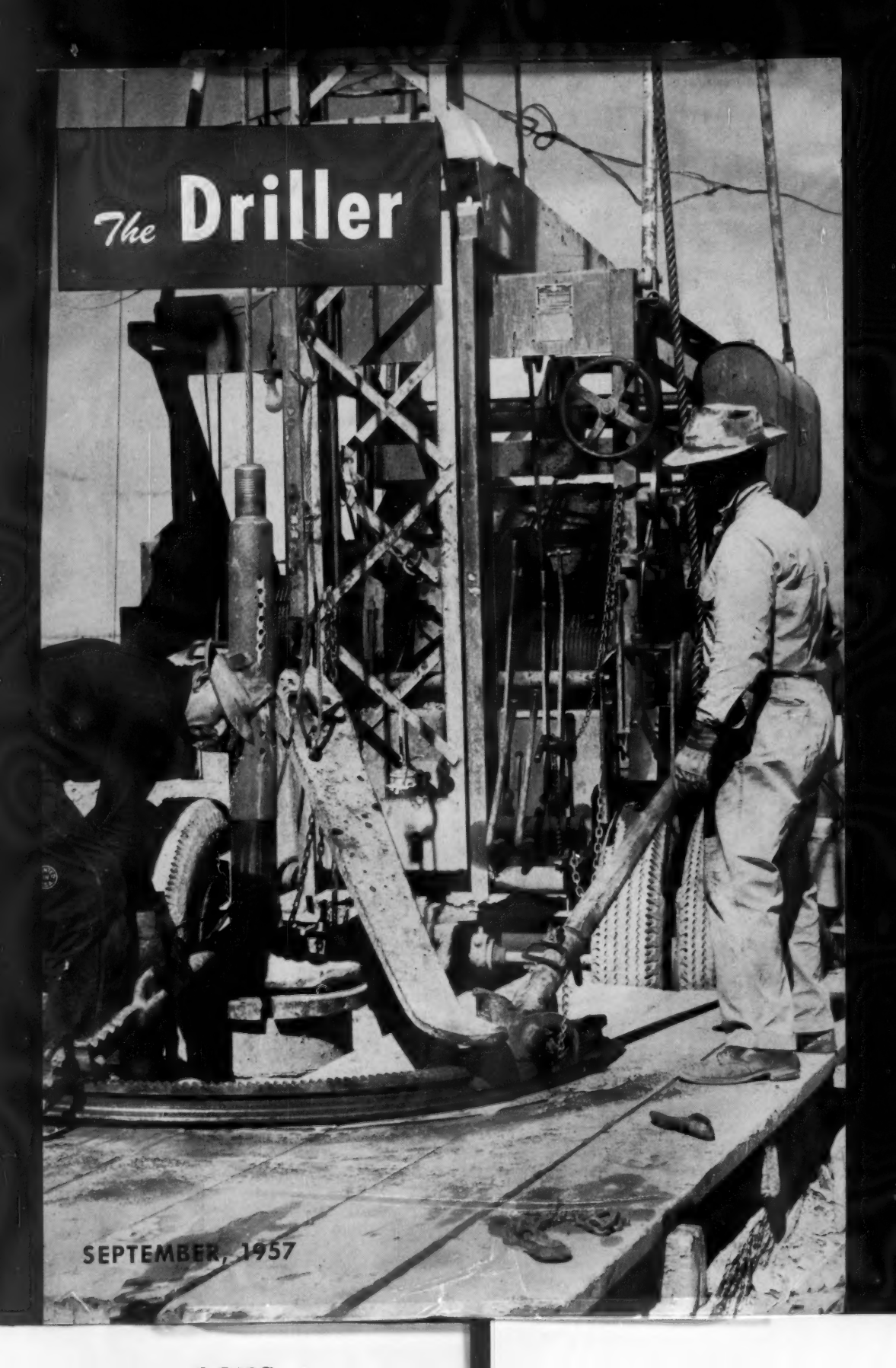
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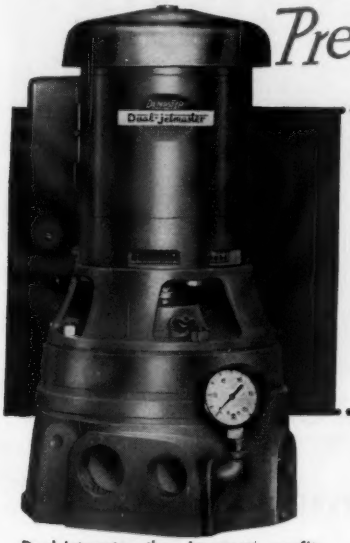

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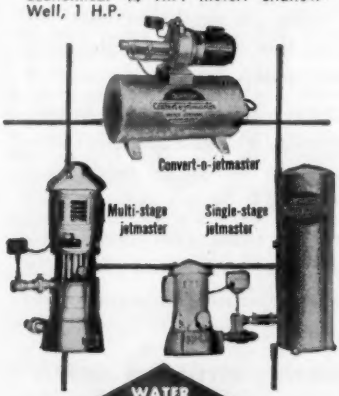

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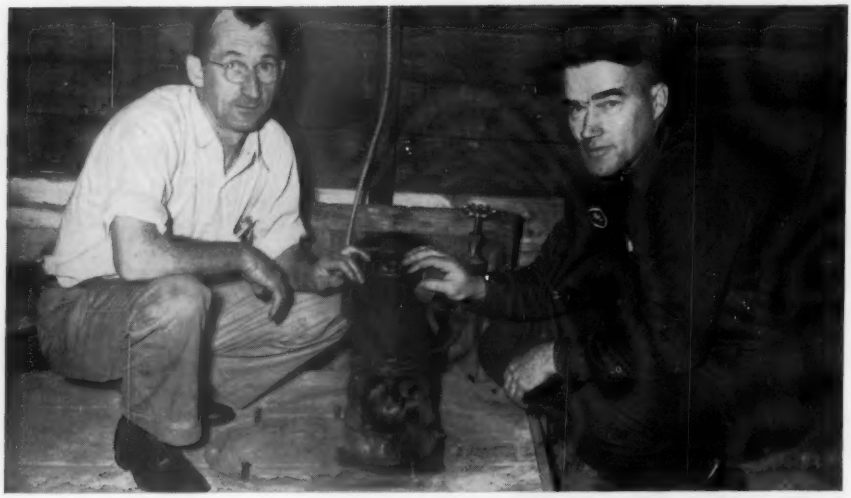

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The Driller

South Milwaukee, Wisconsin

Vol. 31 No. 9

September 1957

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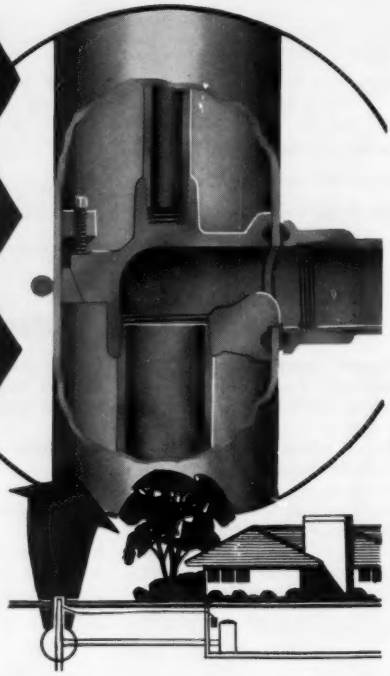

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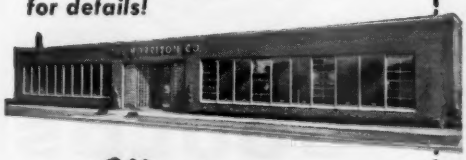

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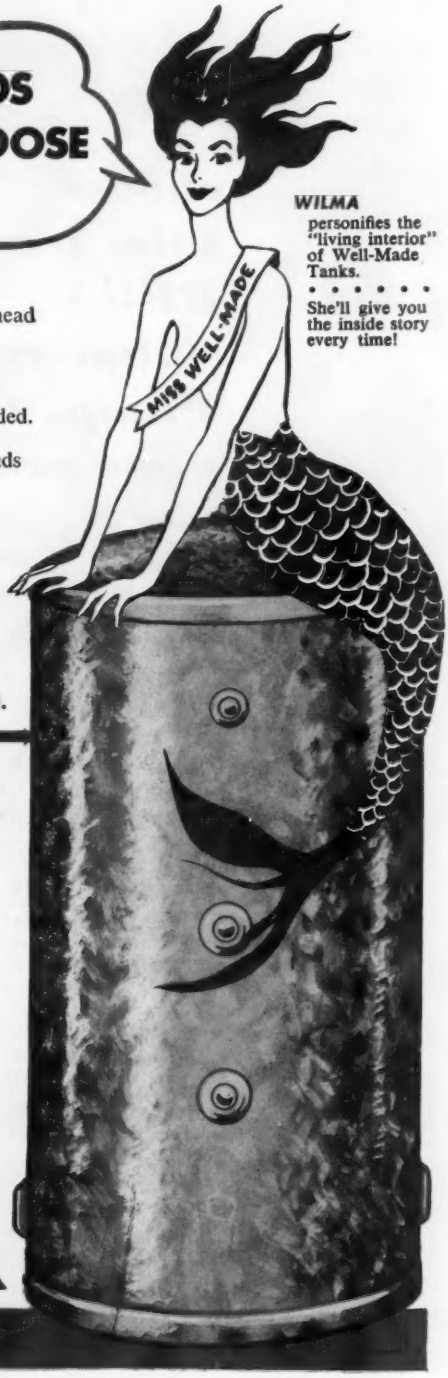

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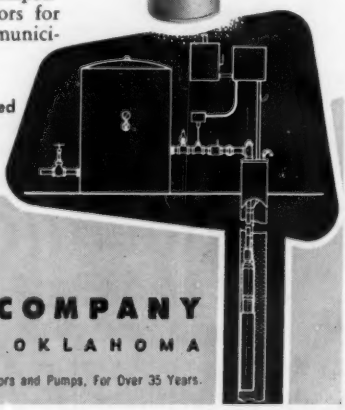

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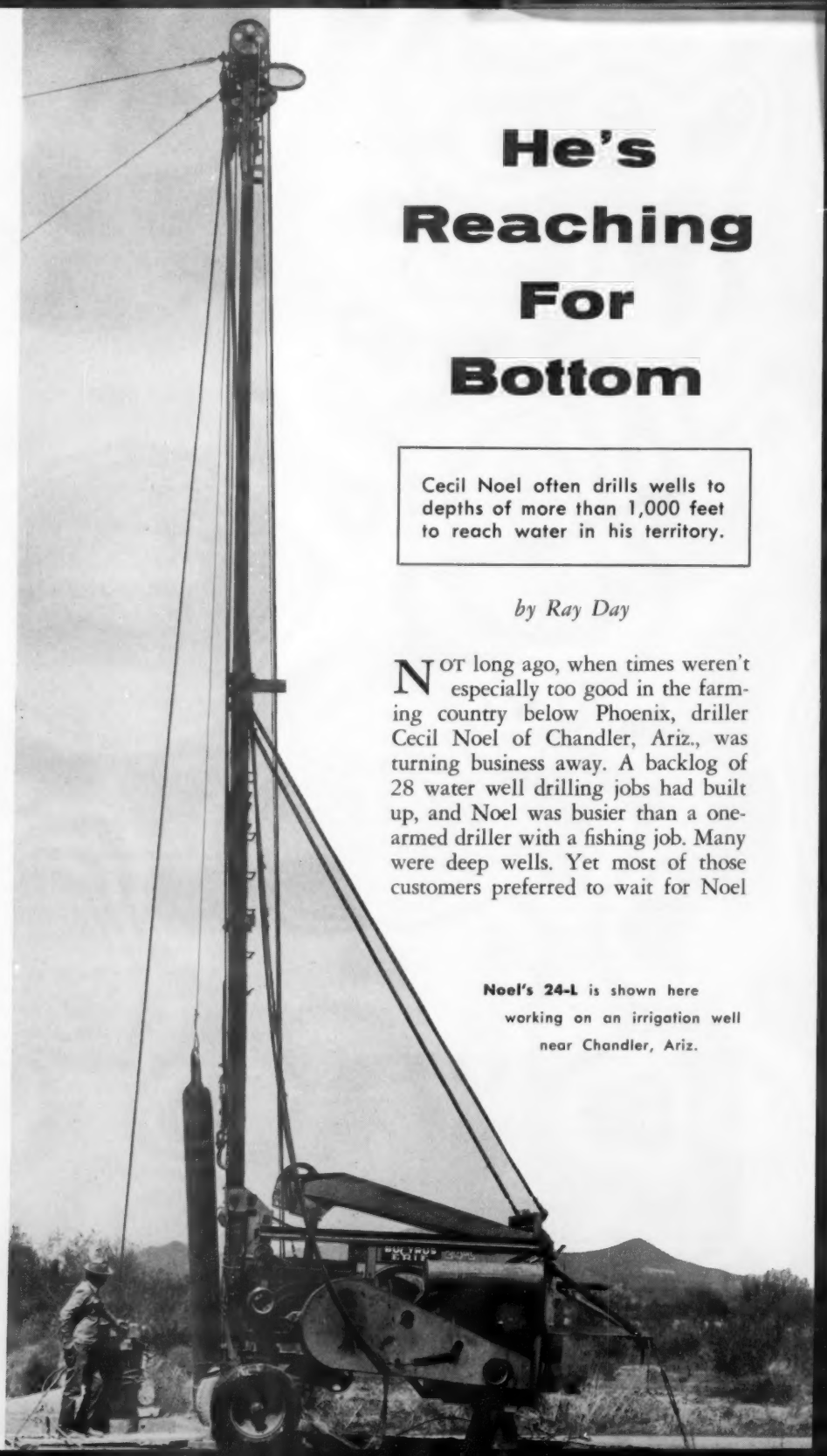
He's Reaching For Bottom

Cecil Noel often drills wells to depths of more than 1,000 feet to reach water in his territory.

by Ray Day

NOT long ago, when times weren't especially too good in the farming country below Phoenix, driller Cecil Noel of Chandler, Ariz., was turning business away. A backlog of 28 water well drilling jobs had built up, and Noel was busier than a one-armed driller with a fishing job. Many were deep wells. Yet most of those customers preferred to wait for Noel



Noel's 24-L is shown here working on an irrigation well near Chandler, Ariz.

to drill, rather than to give their job to someone else.

Noel commands that kind of customer loyalty because he's proved his ability to handle drilling jobs dependably in an area where water well drilling is a dead-serious, important business. With a long background in oil drilling, Noel — who is from the Pampa (Tex.) country — gets water wells down where they have to go. In his area, big-diameter irrigation wells have passed the 1,000-ft. mark and are headed toward 2,000 feet. Near Eloy, one well has been drilled to 2,300 feet. That's an index of how the water table is dropping and how important a well is to its owner. First-stage pump settings are down to 300 feet and lower. It isn't unusual for an owner to invest from $20,000 to $25,000 in a 20-in. irrigation well. Farmers investing money like that want a driller with dependability, a reputation and good equipment. They know they're getting all that and more when Noel handles their drilling.

A Deep-Drilling Expert

Noel is a deep-drilling expert. Consider this well, for example, which is typical of those he drills regularly:

It's for irrigation. It's 20 inches in diameter, located on a farm 10 miles south of Maricopa, Ariz. Maricopa is in farming country, 35 miles southeast of Phoenix. Noel is drilling this one with his Bucyrus-Erie 28-L drill, which he purchased new less than two years ago.

The well was started February 9, 1957, at 20-in. diameter. By April 4, less than two months after spudding in, it was 1,000 feet deep and was still at 20-in. diameter. The formation all the way had been typical of the huge alluvial fan below the lofty mountain ranges at the north end of the valley. It consisted of sand, gravel, clay streaks, boulders and some cemented conglomerate. Here and there, as the 1,000-ft. depth was reached, occasional chunks of fairly hard granite began to be picked up by the bailer. A water-bearing formation had been found at 250 feet, but it quickly dried up — probably because the drilled hole connected with other water-bearing strata farther down. With the hole down 1,000 feet, the static water level was standing at 300 feet.

The husky 28-L, fired with power from its butane-driven Waukesha engine, had slogged it out 24 hours a day for nearly two months. A 3,700-lb. string of tools had punched the hole deeper and deeper—rapidly at first, and then slowing down to about a foot an hour at the 1,000-ft. level. The first 400 feet had been drilled in less than a week. The tool string consisted of a 6-foot long, 2,000-lb. paddle-type bit, a 5½-in. drill stem, 20 feet long, and 200-lb. rope socket. Jars were not used.

This well pierced ground so tight and sticky (almost all of the wells in Noel's territory have that characteristic when they're deep) that the 20-in. Consolidated Western Steel casing didn't cooperate too well in going down. For that reason, the hole had been enlarged slightly by a Wilson underreamer to make the all-welded steel liner go down easily. The casing was carried with drilling to 600 feet. There it was snubbed off with a set of clamps. The hole was then drilled open to the 1,000-ft. level, with a predicted final depth of 1,200 feet. At

Driller Dave Russey, left, and his boss, Cecil Noel, discuss the well they are drilling with the 24-L. Some of Noel's key men have been with him for years.

that point, a 16-in. inside liner will be set from the 600-ft. level.

That's somewhat of a departure from Noel's general practice, incidentally. As a rule, he carries casing right on down with drilling. The 28-L has handled exceptionally heavy strings of large-diameter casing, with walls as thick as 5/16 inch. It uses a 6-part rigging hookup to make such heavy lifts.

The well owner was happy. The hole was straight. It was cased properly. It contained water. He couldn't ask for more.

Balanced Equipment

Noel's equipment list has developed so that he now has a balanced number of machines which will handle everything from the deepest large-diameter irrigation wells to typical domestic jobs running approximately 350 feet deep. In addition to the 28-L—which he uses for some of his heaviest work—he has a new S-43 Walker Neer spudder and a Bucyrus-Erie 24-L. The latter machine can handle the big-

A hearty flow of water rushes from a Noel-drilled well to thirsty crops.

This lettuce crop, stretching as far as the eye can see, will be provided with a supplemental water supply from a well the Bucyrus-Erie 24-L is drilling.

diameter jobs down to a depth of about 650 feet. It is generally used, however, on lighter work, such as smaller irrigation wells or domestic jobs. The Walker Neer spudder was purchased to enlarge on the firm's ability to take tough, deep jobs.

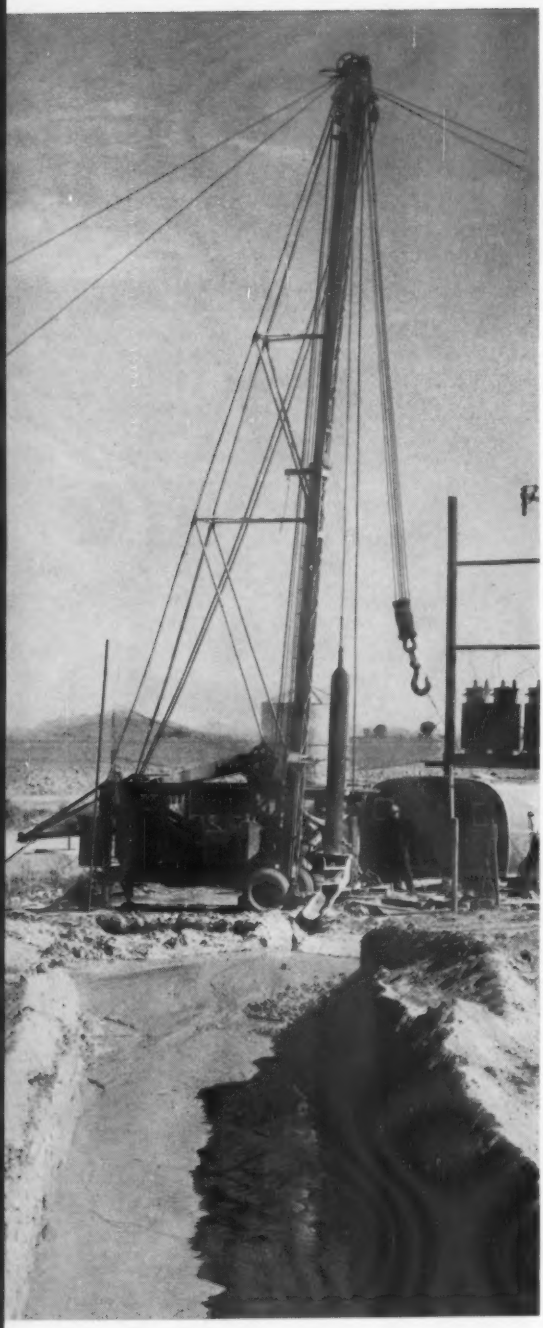
Each of the drills is driven by a butane-powered engine. At each rig also is a welding machine and a supply of hard-surface rod for building up drill bits. Noel's general practice is to build up a bit with G-E No. W-1016-A rod, and to finish off with a hardfacing rod such as Lincoln Abrasoweld or G-E No. W-94. In sand, clay or the gravel alluvial sand formation, an open paddle-type bit, kept sharp, seems to do the best job. In hard rock, a star bit is better.

Uses Only Best Casing

Noel pays special attention to all casing which he installs. He uses only the best: a precise rolled, end-milled product, assembled in Phoenix by Consolidated Western Steel Co. The casing is rolled and has one longitudinal weld. It has a welded sleeve-type coupling, with inspection holes which permit a driller to make sure that the ends are securely butted. The field weld on each collar or coupling

To enlarge hole, underreamer parts hold together under spring-loaded tension and release when casing is cleared.

consists of a stringer bead of Lincoln No. 85 rod, burned in deeply. Two filler beads of the same rod then are



applied to complete the fillet. The resulting casing job is good for the life of the well.

Noel is almost hypersensitive about well casings, because he's seen the trouble they can cause. Some of his toughest problems these days, for example, are connected with old casings which didn't hold. Many years ago, well drillers installed riveted casings. As the years went by, those rivets rusted away. When they did, the casing buckled and curled. It's a tough job to fish that kind of material out of a hole.

This part of Arizona also has a severe sand problem, and it isn't unusual for sand actually to cut a pump bowl in two. Noel has been called on many times to fish pump bowls, along with old casing, out of deep wells.

Oil Field Background

Noel grew up in the oil field country around Pampa, Tex., where his father had moved in 1914. After several years of dressing tools and doing other roustabout jobs in the oil fields, Noel did a little drilling for himself, chiefly spudding in for oil wells, setting conductor pipe and doing some rathole drilling. When World War II came along, he took a job in a shipyard until that was practically over, because his services were needed there much more than they were in the drilling business.

In 1945, he bought an old Wichita Falls No. 15 spudder and set out in the drilling business for himself near Pampa. His business grew, and in 1947, after he had moved from Pampa to Phoenix—looking for new territory where the climate suited him

A mud pond fills up ahead of 28-L, which is drilling an irrigation well.

D. M. Noel examines some of the welded steel casing his father's firm uses.

better — he purchased a Bucyrus-Erie 22-W. The 24-L, which he currently uses, was bought in 1951. The 22-W was traded in at the time the 28-L was purchased, late in 1955. Noel had picked up another rig along the line, a Model 83 Star, in 1952. This machine was traded in on the Walker Neer spudder. In a sense, Noel has tried them all and has settled on the machines which give his jobs the best balance.

From the very start, Noel went for the deep stuff. One of his best wells was a job for Suburban Water Co. of Phoenix. That one started at 20-in. diameter, went to 1,000 feet, then reduced to 16-in. diameter to 1,390 feet.

Noel's son, D. M., now has joined the business helping his father. D. M. is an intensely practical well driller, having worked at that and other occupations, including a stint in the logging woods, for several years after his military service.

How does Noel keep new business coming in? Strangely enough, that seems to be no problem even though the area has a high well-driller concentration. He simply keeps good equipment, works slowly and carefully, isn't afraid to pull off and start over if the hole starts crooked, and keeps dependable drillers. His key men have been with him for years.

It all adds up to a dependable well drilling job, and that's what Noel's customers have to have for the stack of blue chips they gamble on these big, deep holes.

This is a typical bit used in drilling through alluvial fans in Noel's area.

After inspecting the location of a domestic well being drilled with one of the firm's five 20-Ws, Orlie Young climbs into pickup truck to move on to next job.

He Knows Them Well

Thirty years of drilling have made Orlie Young familiar with the locations, formations, people of the Cumberland Mountains.

WITHOUT a doubt, some of the most spectacular scenery in Tennessee can be seen in the Cumberland Mountains, which stretch across the eastern part of the state. The steep mountain roads, high ridges and rugged rock outcroppings present interesting, but usually difficult locations for setting up water well drills. Orlie Young, who operates his water well drilling business out of Crossville, a town of 2,300 located in this part of the state, knows just how difficult some of these locations can be. He ought to. He's been drilling water wells in the area for over 30 years.

About 85% of the wells Young drills are for farm and rural home use. He also puts down a very small percentage of industrial wells and an occasional air conditioning well.

In addition to the water wells, he does a limited amount of blast hole drilling, and has drilled holes for coal mines in the area. Once he was called on to drill several 8-in. holes down

300 feet into a mine. The holes were used to provide passage for heavy-duty electric cable, which was run through them to the mine floors. Their purpose was to escape the necessity of running the cables three or four miles around through the mine entrances.

Describes Drilling Career

On the first job in his 30-yr. drilling career, he worked as a driller for G. B. Holbert, whose daughter he later married. From this job he moved on to drilling for the U. S. government on a huge homestead project near Crossville. The homestead was divided into farms averaging 80 acres in size. The more than 400 homes built on the homestead had to be supplied with water, and Young's job was to drill wells to furnish it. Before long, he was made superintendent in charge of the entire drilling project. "It was a lucky break for me," Young stated. "While working on this job, I was finally able to save a little money.

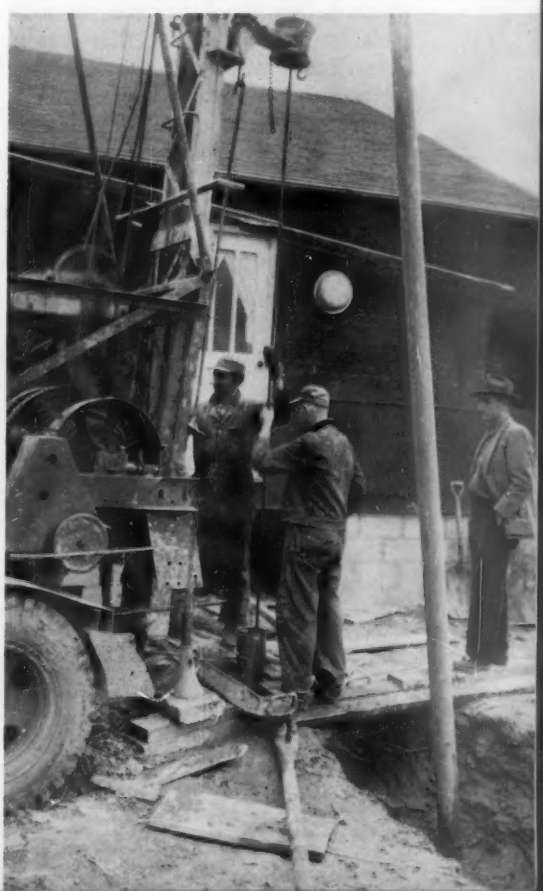
"When that job was finished, I had saved up enough money to buy myself a drill and strike out on my own," he continued. "I had plenty of friends around Crossville and didn't have any trouble lining up a number of jobs before buying the rig. It was a Bucyrus-Erie 21-W. The drill was delivered to me on November 10, 1937; I'll never forget that day. It sure opened up a world of opportunity for me. Within a year, business had piled up so much that I had to buy another drill. This one was another 21-W."

Business continued to grow at a steady rate, and more machines had to be added to take care of the mounting backlog of orders. Today Young owns five drills, all of them Bucyrus-Erie 20-Ws.

Three of the drills are mounted on Ford 2-ton trucks—one '48, a '51 and a '52. The other two are mounted on 4 x 4, 1½-ton army trucks. All of the drills are powered by Hercules engines.

"I bought a spare Hercules engine last spring, just to have on hand in case the motor on one of the rigs should go haywire," Young stated, "but I've had no occasion to use it so far. If these rigs keep on performing the way they have been, I'll never have any use for it."

For general service and hauling work, one of six pickup trucks is called into operation. They are: three '57, ½-ton Chevrolets; one '50 Ford; a



Young watches driller and helper drill well atop a mountain near Chattanooga.

'51, 1-ton Chevrolet; and a 1½-ton Dodge.

Young doesn't do any of his own welding. Instead, when some welding job is necessary, the work is taken to a welding shop located in the vicinity where the rig happens to be working. "Our rigs are generally scattered over such a large area," Young explained, "that it wouldn't pay us to invest in a great deal of welding equipment. And most of the time, even if we did have our own welding shop, it wouldn't be as conveniently available as a commercial welding shop."

On practically all of the wells Young drills, pumps are installed by dealers he has recommended to his customers.

"At one time I installed all my own pumps," he related, "but I have found that many of the pump dealers with whom I now work provide me with leads for new jobs. For that reason, I'm actually better off not installing the pumps."

All the drills are equipped with 18-ft., 4¼-in. drill stems and are spooled with Wickwire wire rope. Drill bits are dressed right on the job.

Young sets 6¼-in. ID galvanized casing exclusively in all the wells he drills. He explained that the high mineral content of the water in his area isn't too good for black pipe, so he very seldom uses it.

Young has a crew of drillers and helpers which he claims is about as capable as could be found anywhere. They are his son, George, 24, who operates his own 20-W; two sons-in-law, James Smith and James Lender, both 23; Homer Howard, 28; and Romy Davis, 35. Davis operates one of the rigs out of his home in Mooresboro, N. C.; James Lender works out of Forest City, N. C.; and the others work out of the Crossville area.

"I haven't always had such an exceptional crew of drillers though," Young hastened to explain. "Just to give you an example of the kind of help you occasionally run into, let me tell you about a character I had working for me some time ago. He was a young chap in his twenties, who I

Young's son-in-law, driller James Smith, starts down in search of water to supply a new home which is to be built on this wooded lot near Crossville.

Driller Romy Davis (1) and Richard Bates hammer out drill bit at job site.

always thought had pretty much on the ball. I used to let him go out on a new job and deal with the customer, select the best location for the well, set up and start drilling all by himself. I marveled at the way he could be depended on to carry out a job like that without supervision.

"Once I stopped to check the progress on a well he was putting down for a farm home and noticed that he had the drill set up quite a distance from the buildings. And I couldn't help noticing that it was set up under a big shade tree. When I asked him what reason he could possibly have for setting up so far from the buildings, he grinned and explained, 'I'm just playing it smart. Whenever I go out on a new job, I explain to the customers that I can locate the best spot for the well by using a divining rod. I get out a forked stick and go through the motions of trying to find water. I make the rod bend toward the ground on the most level spot I can find or where there is a nice shade tree that will make drilling more comfortable. I tell them that's the spot where the greatest flow will be obtained. They usually tell me that I should by all means put the well down there, even though it may be a somewhat inconvenient location for them. How do you think I was able to get by with setting up under this nice shade tree here?'

"Needless to say," Young chuckled, "that young fellow didn't put down another inch of hole for me after that."

Young works a large territory in his drilling operations; his area covers everything within a 300-mi. radius of Crossville.

In addition to the work he handles out of his home location in Crossville, Young contracts for a considerable amount of drilling in North Carolina. Drillers James Lender and Romy Davis, who live in North Carolina, handle most of the drilling in this area. Many of the cotton mills located in North Carolina build housing projects for their employees, and Young drills a great number of wells there to provide water supplies for these houses.

Ground formations in the Crossville area generally run as follows: after a thin layer of topsoil, a sandstone stratum runs down to around 50 feet; this is followed by a 40 or 50-ft. layer of shale, which in turn is followed by another layer of sandstone. After 70 to 100 feet of this sandstone layer,

(Continued on page 48)

Field Test for Iron In Water

Through use of this simple test, the driller can tell a customer in a matter of minutes how much iron his well water contains.

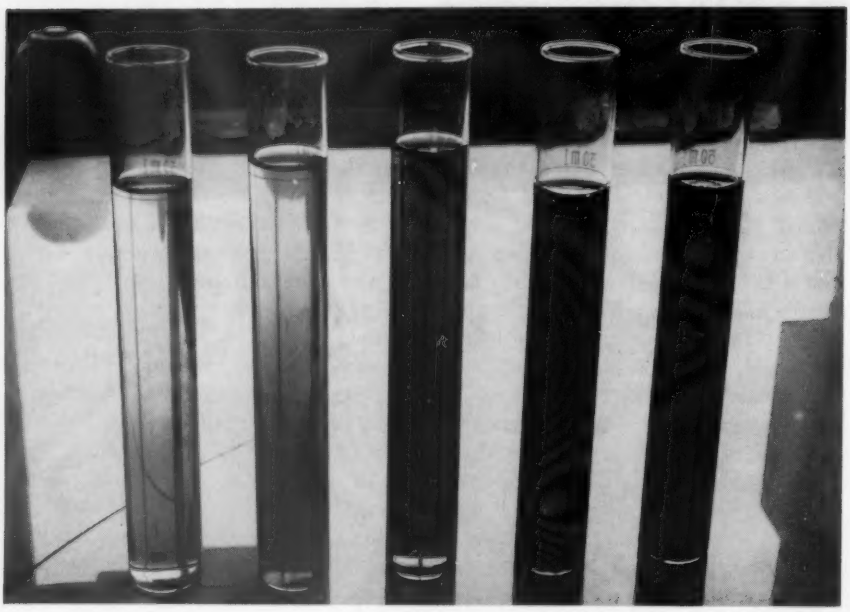
by Frank J. Versagi, Mueller Brass Co., Port Huron, Mich.

WITH the help of a druggist and for less than a 15-dollar investment, the driller can equip himself to determine—in the field or in his shop —the approximate iron content of waters. The test takes less than ten minutes.

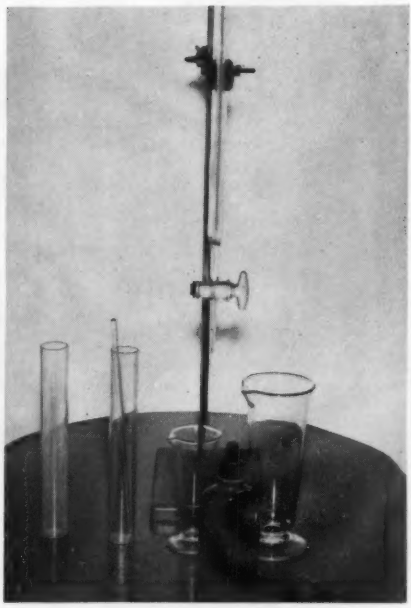
The alert driller will immediately recognize the customer service interest and self-interest served by having access to such knowledge as the iron content of the waters he locates.

The chemicals needed are few and readily available. The accurate weighing necessary to make up the first solutions can be done by a druggist. (The

The glass cylinders below contain samples of waters with varying degrees of iron content. Red-brown color becomes deeper as the iron content increases.



Equipment needed (at right):
Nessler tubes 200 cc capacity
Glass stirring rod
Measuring vial—10 cc capacity
Measuring vial—100 cc capacity
Dropping bottle
Buret (long graduated glass tube for measuring liquid volume)—10 cc or 25 cc capacity



weighing is needed only once for each batch of chemicals, which are then good for about a hundred determinations.)

Before we go into the actual step-by-step procedure, let's take a very brief look at the principle behind this test for iron, since the driller would not want to blindly follow a set of instructions without knowing the why behind the steps.

Iron exists in water in two chemical conditions—called ferrous and ferric. These terms refer to the chemical-combining power of the iron. In the ferrous state, the iron has a combining power of two; in the ferric state, it has a combining power of three.

Ferric iron has the property of developing a brownish-red color when certain chemicals are added to it. Depending on how much iron is present, the color may be very pale or quite deep or anywhere in between. By treating water with the correct chemicals, it is possible to convert all the iron present to the ferric state and then to develop the color. This color is then compared to that of water containing a known amount of iron. Such a known sample is called a standard.

In the laboratory, delicate electronic instruments are used to measure the coloration, but in the field an entirely suitable approximation of the iron content can be determined by visual comparison.

First, get the solutions made up;

(Continued on page 50)

SOLUTIONS REQUIRED

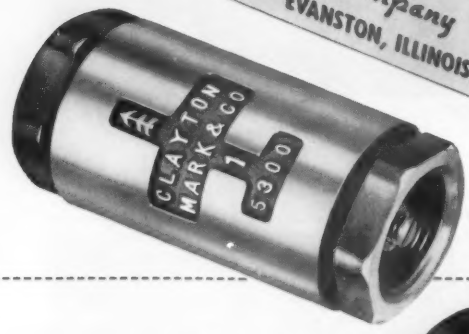
Solution #1. Standard Iron Solution. Dissolve 0.702 gram of ferrous ammonium sulfate crystals in about 50 cc of distilled water and 20 cc of concentrated sulfuric acid. Warm and add Solution #2 until a slight pink persists. Dilute to 1 liter (1000 cc).

Solution #2. Potassium Permanganate. Dissolve about 6.3 grams of potassium permanganate in distilled water and dilute to a liter.

Solution #3. Potassium Thiocyanate. Dissolve 20 grams of potassium thiocyanate in distilled water and dilute to 1 liter.

Solution #4. Hydrochloric Acid, 1 to 3. Add 250 cc of concentrated hydrochloric acid to 750 ml. of distilled water.

Look



No. 5300 All-Brass Spring Check Valve—
sizes ½" to 4" I.P.S.

No. 5330 All-Brass Spring
Foot Valve with Strainer—
sizes ¾" to 4" I.P.S.

CLAYTON MARK

"Since 1888 . . . a great name in water"

No. 5340 All-Brass Spring Foot Valve with Strainer—
sizes ½" to 2" I.P.S. Specially designed to
enter smaller pipes.

EVERYTHING YOU NEED TO GET

WELL POINTS • DRIVE SHOES • DRIVE CAPS • CHLORINATORS • CYLINDERS • LEATHERS • CHECK VALVES • PITLESS ADAPTER

for THE RED-AND-WHITE CLAYTON MARK package

FOR THE BEST BUY IN FOOT AND CHECK VALVES

THE RED-AND-WHITE METAL-EDGE PACKAGE IS THE SIGN OF THE MOST COMPLETE LINE OF WATER WELL VALVES

Here's how to be *sure* of top quality in foot and check valves! When you insist on the red-and-white Clayton Mark package, you know that you're getting easier installation, fast closing, quiet operation, longer service life . . . plus the most complete line of water well valves on the market.

Look at the quality features *inside* the package! All-brass construction, with corrosion-proof Monel springs and exclusive Clayton Mark "Perma-Kleen" valve facings for positive seating. Wrench flats and accurately finished threads for easiest installation. Precision stem guiding. Take-apart design.

EVERY VALVE TESTED

The Clayton Mark red-and-white package means that the valve inside has passed a rigid hydrostatic test—proof that it will do the job. The package is your promise of Clayton Mark quality.

MOST COMPLETE LINE

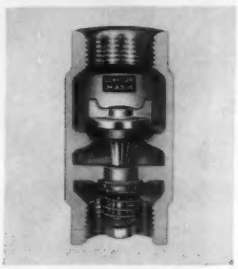
Only a few of the many Clayton Mark foot and check valves are shown here. The Clayton Mark line is the *complete* line, with a valve for every water well application. Many millions are in use today!

Be sure to get exactly what you need—be sure to get the best! On your next order—insist on the valve in the red-and-white package.

See your Clayton Mark distributor . . . or write for the complete Clayton Mark Check and Foot Valve Catalog.

CLAYTON MARK & COMPANY

1900 Dempster Street • Evanston, Illinois



Note the clean, compact design of the Clayton Mark No. 5300 Check Valve. Exclusive "Perma-Kleen" poppet facing means quiet operation and years and years of tight seating without sticking.

Clayton Mark No. 5330 Foot Valve is made for easy servicing. Perforated sheet brass strainer. Every Clayton Mark check and foot valve is hydrostatically tested before it leaves the factory.

WATER OUT OF THE GROUND!

FOOT VALVES • STRAINERS • SANITARY WELL CAPS • AND THE COMPLETE CLAYTON MARK LINE OF WATER SYSTEMS

News of the month

Hydraulic Rotary Attachment For 1-W Drill Demonstrated

A drilling demonstration sponsored by R. R. Howell Co. of Minneapolis —showing the first Bucyrus-Erie 1-W drill with new hydraulic rotary attachment and Moyno pump unit, at work in Minnesota — was held July 31 near Brownton, Minn. A 3-in. well was drilled 90 feet in 90 minutes through clay and gravel. A 3⅞-in. drill bit was used and the well was finished off in sand at 100 feet.

Approximately 75 well drilling contractors—some from more than 300 miles from Brownton—attended the demonstration and were served a complimentary lunch.

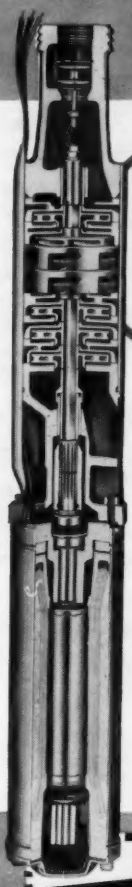
The drill site, water truck, casing and miscellaneous material were furnished by Clarence Heil & Son, a Brownton well driller. David Williams of the Howell Co. directed the demonstration. Bucyrus-Erie personnel on hand included sales representative Bill Steenrod and service engineers Lee Lovell and John Reed.

Submersible Program Slated For NWWA Exposition

Announcement has been made by the NWWA Pump Committee of a "Submersible Program," which will

(Continued on page 30)

NEW DEMING SUBMERSIBLE PUMPS



Note These Features...

1. Pump Shaft is flatted on two sides. (No keys are required.) Slippage of impellers on pump shaft is eliminated. This feature assures a balanced, positive drive of the impellers.

2. Extra large diameter of pump shaft gives greater strength.

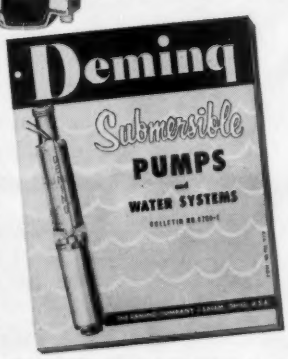
3. Pump shaft is stainless steel, ground and polished.

4. Motor is prefilled at factory. No further lubrication is required. Motor is *sealed* against sand and abrasives. Motor windings are enclosed in stainless steel case.

5. Entire pumping unit is corrosion-resistant.

6. Durable, 3-wire, heavily insulated cable is waterproof. Durable jacket resists abrasion.

7. Wide selection of sizes, motors and pump capacities up to 1560 gallons per hour. Also made in capacities up to 400 gallons per minute.



THE DEMING COMPANY
512 Broadway • Salem, Ohio

Send FREE copy of Bulletin 6700-E.

Name _____

Address _____

City or Town _____

County _____ State _____

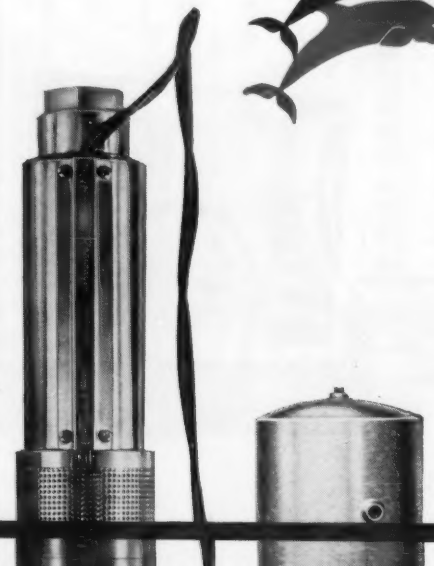
NEW

For the **BIG VOLUME** market
Wells **0** to **360** feet

Rapidayton DOLPHIN

(TRADEMARK-PAT. PENDING)

TWO-WIRE SUBMERSIBLES



Advanced **SIMPLIFIED** Design

Here, for the first time is a *submersible pump* that can meet the needs of all the domestic installations in your area—*both shallow and deep well!* A submersible pump at jet pump prices that will help you quickly

problems—which can be installed easily, quickly, inexpensively. It's the new Rapidayton 2-wire Dolphin submersible with advanced SIMPLIFIED design, made for 4" wells (or larger) 0 to 360 feet in depth. Deep-Setting models ¼ through 1 h.p.; Mid-Range models ⅓ through 1 h.p.; High-Capacity models ¾, 1 h.p.

COMPLETE SYSTEM

You order as one "package," which includes pump with 60 to 100 ft. cable pigtail (depending upon horsepower) attached to pump, overload protection box, fittings, and 42-gal. galvanized tank. Tank meets FHA requirements.

Exclusive **MOTOR** Features

The Tait-designed and made high efficiency "plus power" motor is as simple as a jet motor. It is equipped with an exclusive starting switch (pat. pending) and a super size capacitor which gives fast, sure starts. (No running capacitor needed.) Adjusts automatically to fluctuating voltage.

"DOUBLE LIFE" Stage Design

Only Rapidayton submersibles have the "Double Life" stage design which provides the most perfect solution to the sand problem. This feature gives the 2-wire Dolphin an outstanding plus value and enables Tait to offer the most generous warranty in the industry.

$169.50 RETAIL (¼ h.p.)

Submersible pumps in the same price range with jet pumps! The ¼ h.p. Rapidayton 2-wire Dolphin (pump only) retails for only $169.50.

Rapidayton 50 ADVANCE 1908-1958 WATER APPLIANCES

Rapidayton DIVISION

THE TAIT MANUFACTURING COMPANY • DAYTON 1, OHIO

Established in 1908 as Dayton Pump and Manufacturing Co.

©1957 TAIT MFG. CO.

News...

(Continued from page 26)

be held as part of the 1957 NWWA Exposition in Oklahoma City, Nov. 4-8.

R. W. Lewis, Fairbanks, Morse & Co., will serve as moderator for the session, introducing the subject, "The Advantages and Methods of Conducting a Submersible Service Shop." A series of slides will be presented to show how service work is done in a central service shop operated by a pump distributor or by a strictly service organization. G. A. Patterson, Perfection Manufacturing Co., will serve as narrator for the series of slides.

Second speaker will be L. F. Swanson, well driller from Gibson City, Ill., who will speak on the subject, "Service Starts with Selling a Well to Fit a Submersible." The third subject, "Service Is Properly Checking the Installation," will be presented by Jack Hosford, executive secretary of the Pump Manufacturers Assn.

A. C. BeVier, Franklin Electric Co., will cover the subject, "Service Any Driller Should Be Expected to Render." Title of a talk to be given by driller J. T. Anderson of Morris, Ill., will be "How a Driller Can Set Up a Submersible Service Shop."

CF&I Catalog Describes Wickwire Line

A 72-page illustrated catalog describing the complete line of CF&I-Wickwire wire has been made available by The Colorado Fuel and Iron Corp.

The new catalog gives complete ordering specifications for all CF&I wire, including manufacturers' low carbon coarse wire, high carbon fine and specialty wire, low carbon fine and specialty wire, and flat and shaped wire.

The catalog is available without charge at the company's New York sales department, 575 Madison Ave., or at any of the regional offices.

Clayton Mark Names New Sales Representative

Joseph S. Mikovich, Pittsburgh, Pa., has been named forged steel union sales representative for Clayton Mark & Co., in the mid-eastern states, the company announced recently. Mikovich, a graduate of Duquesne University, will represent the company in Pennsylvania, western New York, eastern Ohio and Toronto, Ontario.

Tiny Jet Pump Developed by Jacuzzi

The development of a tiny new jet pump, small enough to be held in the palm of your hand, has been announced by Jacuzzi Bros. Inc., of

★ It's a complete package system. Comes ready to plug in. Serves either deep or shallow well.

★ Automatically regulates flow of water to injector and pressure tank without customary manual control valve. Maximum capacity assured regardless of vary ing water level or tank pressure.

UNIVERSAL

★ Pressure tank won't water log. Each unit equipped with automatic jet charger.

★ ⅓ or ½ h.p. motor. Choice of 10, 18 or 24 gallon tank.

SEND FOR NEW TECHNICAL LITERATURE ON THE SERIES U.

Something NEW in a low-cost PACKAGE SYSTEM

UNIVERSAL Series U Jet WATER SYSTEM

Here at last is a budget-priced water system you can recommend with confidence.

THE RUGGED PUMP FOR RUGGED JOBS

UNIVERSAL MFG. CO.

3333 Eastshore Highway • Richmond, California
4108 Hoffmeister Avenue • St. Louis 23, Missouri

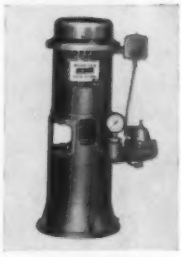
Canada: Rexdale Blvd. at Martin Grove Rd.
Toronto 15, Ontario

An All-Star Team AURORA Water Supply Winners

Richmond, Calif. This new self-priming pump, known as the "MIJET", is powerful enough to pump in excess of 450 gph. Its compact size requires only a minimum of installation space and, mounted on a common base plate with a motor or engine, it can also be readily portable to any required location, the company claims.

Designed to sell for under $30, this jet pump is excellent for the suburban home owner for use in filling overhead tanks, draining basements, for providing ample water at household pressures, for sprinkling and irrigating small gardens, among other things, according to the company.

Morrison Announces Multi-Stage Jet Pump

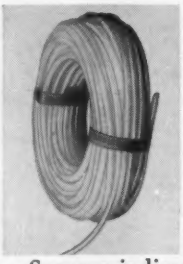


Development of a new vertically-mounted multi-stage jet pump is announced by The Morrison Co., Milwaukee manufacturers of domestic water pumps and water systems.

The new Aqua-Flo Multi-Stage Pump — Model AJ-100 3F series — offers unusual pumping efficiency at low power costs. Features claimed for the pump include: vertical-mounted design for space-saving installation; 3-stage operation for higher pressures; pressure regulator preset; positive non-leaking mechanical seal; and drip-proof canopy. The pump is designed for capacities up to 3,000 gpm, with pumping range up to 200 feet. Pressure range is 30 to 60 psi.

Further details on the new pump as well as other jet, piston type, submersibles and deep well rod pumps may be obtained from The Morrison Co., 125 W. Melvina St., Milwaukee 12, Wis.

ClearStream Plastic Tubing Available from Yardley



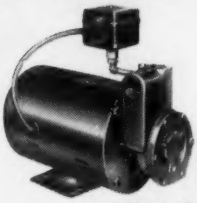
The Yardley Plastics Co. of Columbus, Ohio, has announced the availability of ClearStream plastic polyethylene tubing for use in ventilating domestic well seals.

Surveys indicate the best procedure for properly venting a well is to attach one end of the tubing to the seal's vent outlet. The tubing is traveled along the offset pump pipe route into the basement, where it can be anchored

(Continued on page 40)

"All I said was, 'Here's your money. You certainly did a wonderful job finishing our new well.'"

An All-Star Team AURORA *Always* PUMPS *Water Supply Winners*

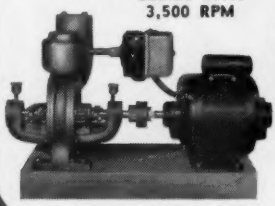


SERIES BTHS
3,500 RPM

Satisfy EVERY *Water Need* PROFITABLY *with America's* FASTEST GROWING *Line*

EASY to SELL INSTALL SERVICE

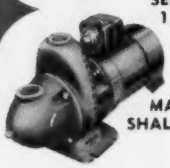
With the AURORA LINE you hit the jackpot. Top Quality at a Competitive Price — a full range of types and sizes for ALL situations — advertising and marketing aids — plus engineering soundness and brilliant performance that creates and holds GOOD WILL. Make it Pay. Grow the Aurora Way.



SERIES ATLS
1,750 RPM

AURORA TURB-O-MATICS

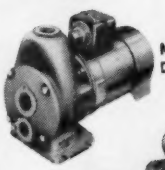
These shallow well units are completely automatic, compact, efficient, quiet and lasting. Close-coupled and flexible coupled units, with or without tanks. Excellent on levels down to 20-25 feet. 1,750 and 3,500 RPM. ¼ thru 3 HP. Capacities to 3,000 GPH.



MAINLINER
SHALLOW WELL

AURORA *Mainliner* JETS

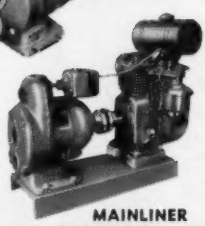
A line of shallow and deep well jets for single or twin pipe installations. Readily Convertible Shallow to Deep Well. Precision built — all-bronze venturi tube and nozzle. Rust resisting metals assure many year satisfaction. ⅓ HP thru 3 HP. Capacities to 7,000 GPH.



MAINLINER
DEEP WELL

AURORA Star-Liner JETS

This sensational NEW packaged series comprises Single Stage Shallow Well, ⅓ and ½ HP; Single Stage Convertible units, ⅓ and ½ HP; Single and Multi-Stage Convertible units, ½ HP thru 1½ HP. All are available as (a) Pump only, (b) Unit mounted on 13 or 30 gal. tank or (c) Unit with 6 gallon operating tank. For trouble-free installation and outstanding performance they cannot be beat. Capacities to 3,180 GPH.



MAINLINER
GAS ENGINE DRIVE

AURORA *Submersible* PUMPS

The most advanced of the submersibles. Highest standards of material quality and precision. Lasting Nylon bearings in each stage are retained in solid brass walls — there can be NO DISTORTION. Pump-motor assembly is rigid to insure true operating unity. Motors are U. S. Electric. For 4" and larger wells. Capacities to 2,100 GPH. Water levels to 400 feet. Easy one-pipe installation. Noiseless, freeze-proof, out of the way. ⅓ HP thru 1½ HP.

STAR-LINER SHALLOW WELL

CONTRACTOR PUMPS

These amazing many-purpose pumps are available in close-coupled for gas engine drive and flexible coupled or V-belt motor drive. They are self cleaning. Have replaceable wear plates to prevent housing wear from abrasives. Quick priming. They make the water behave the way you want, quickly and inexpensively — and are LONG LASTING.

STAR-LINER CONVERTIBLE

Why Wait — Get the Facts NOW — TODAY!

You'll be enthused over the profit possibilities offered by this comprehensive line of Aurora water handling units. Each a LEADER. Each a WINNER. All are products of an organization devoted EXCLUSIVELY to the building of fine pumps. Your inquiry will receive our prompt attention.

AURORA
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PUMPS

DEALERS and DRILLERS
See Your AURORA DISTRIBUTOR
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TYPE DSS
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STANDARD
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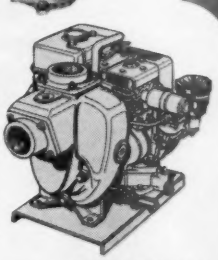
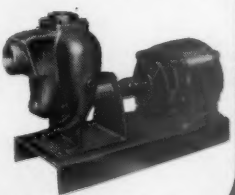


CLOSE-COUPLED



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CONTRACTOR PUMPS

AURORA PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY
58 LOUCKS STREET • AURORA • ILLINOIS
EXPORT DEPARTMENT Aurora, Illinois Cable Address "NYABRCO"

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from the MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers, who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

Utilize Both Gas And Water from Well?

Dear Sirs:

I would like to know how gas can be used to lift water. I am currently drilling a well to 800 or 900 feet. Water level in the well is 500 feet. The casing head gas pressure is 50 lbs., but by lowering the water level to 600 feet, the pressure can be raised to 100 lbs.

I would like to lift two to four gpm, if possible, by using this gas pressure, and make dual completion of the well, using it for both gas and water production.

I thought possibly four or six stages of jet might do.

F.B. Colo.

Dear Sir:

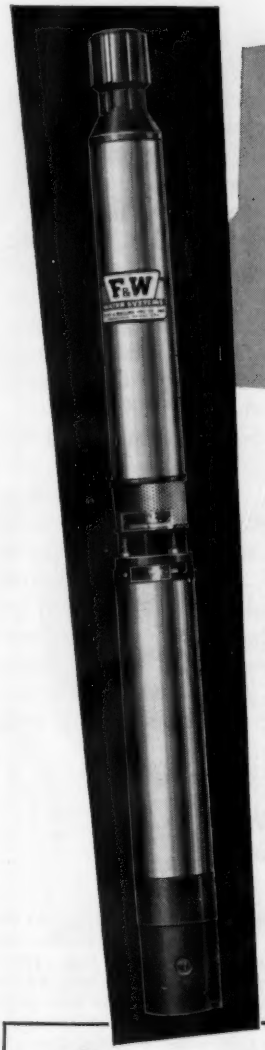
We presume you have in mind using the gas pressure of this well in the same manner as an air lift is used to pump water from a well. However, in this case, the water level is at 500 feet, and we rather imagine an air lift pump would not be successful under these circumstances. The reason for this is that submergence should be at least 60% for an air lift pump to funtion with reasonable efficiency at high heads. In this case, submergence would have to be beyond the depth of the well to function at all, for as depth increases to the water level, more submergence is required. It is questionable whether an air lift pump could be installed to lift water from 500 feet in any event. The system would have to be fool-proof in any and all respects to lift water from such a depth.

The 50-lb. head pressure would normally be sufficient to lift water by utilizing a by-pass system. This would confine the pressure so that it could be used for lifting the water from a well whose head would be close to the surface, and where some 60% submergence is possible. We rather doubt that 50 pounds would make even a small dent in the amount of pressure needed to lift water from 500 feet under any circumstances of submergence.

You also mentioned a 4 or 6-stage jet pump as possibly being sufficient to deliver 2 or 4 gpm. Gas pressure or air pressure can't be used to operate a jet pump in any case, since the principle of jet operation is water pressure rather than air or gas. As you know, the water pressure in the pump is maintained by the use of a centrifugal pump which forces water down through a jet body containing a venturi tube. In this case, the 500-ft. water level prohibits the use of a jet pump, since most of these pumps are limited in their ability to lift water beyond 200 feet.

The only possible use we can visualize for the gas pressure to pump such a well would be to utilize it in some way to operate a source of power which, in turn, would be hooked up to a plunger pump for this amount of water. Such a hookup would, in all likelihood, be impractical and costly.

The old-fashioned rod pump would



F&W SUBMERSIBLE PUMP

Two great new pump series offer new capacity and pressure combinations

• F & W's two new Submersible Pump Series S and SM give you capacities up to 1650 G.P.H. and depths to 500 feet for wells 4" or larger. Series S gives you high-pressure with medium capacity, while Series SM produces high capacity with medium pressures. For instance at open discharge and a depth of 100 feet you can get 930 gallons per hour, with a 1 H.P. Series S unit. With a 1 H.P. SM Series pump at open discharge you can get 1360 gallons per hour from 100 feet.

The complete pumping unit is at the bottom of the well, silently and efficiently pushing water to the surface through the single discharge pipe to the pressure tank. F & W Pumps are designed for long, trouble-free, efficient operation under water. There is no need to allow added time for non-metallic parts to expand or adjust to water temperatures or conditions because F & W pumps are all bronze and stainless steel. Motor is hermetically sealed.

You will find it especially outstanding for the following advantages:

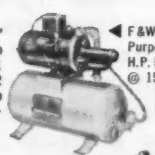
Low Cost Operation • Easy Installation • Interchangeable Parts • Minimum Maintenance • Repairable in Field • Lubrication-Free • Silent, Invisible • Full Floating Impellers Assure Longer Life • Self-Priming, Automatic • Meets State Sanitary and Well Codes

See your F & W distributor, or write for full information, today!

FLINT & WALLING MANUFACTURING CO., INC.
997 OAK STREET, KENDALLVILLE, INDIANA

◀ F & W Patented, Exclusive "VARIJET"–40-70% more water, yet cuts current used. ½-¾ H.P. Motors, 720-1800 G.P.H. @ 10 ft. @ 20 P.S.I.

◀ F&W "Multi-Purpose" Jet–Easily changed to deep-well use. ½-1 H.P. Motors; 1 or 2 stages. Pressures to 100 lbs.; Maximum capacity 950 G.P.H.



◀ F&W Economy "Multi-Purpose" Jet. ½ & ½ H.P. Motor, 350 G.P.H. @ 15 ft. & 20 P.S.I. Easily changed to deep well.

F & W Multi-Stage Jet–3 stage, 1-2 H.P. Motors, 1430 G.P.H. Patented, Exclusive Control Valve, Speedichange-Seal, Air-Injector. ▶

F & W 6" Stroke Piston Pump–½-1 H.P. motors, depths to 330 feet, maximum capacity 480 G.P.H. ▶

F & W Centrifugal Contractor's Pump–Single stage. 2 H.P. gas engine rating. Capacities to 90 G.P.M. at 35 ft. head and 3600 R.P.M. For general drainage, and filling operations. Easily portable. ▶

F&W means Flowing Water by Flint & Walling

be the most practical and inexpensive for this installation. Two-in. drop pipe attached to 1 13/16-in. x 6-in. brass-lined cylinder, equipped with 5/8-in. wood sucker rod actuated by a rugged pump jack or pumping head at the surface, would be about the only kind of setup we would consider feasible and economical under the circumstances.

Slow Drilling In Quartzite

Dear Sirs:

I have run into quartzite in a well I am currently drilling.

I would like to have any information you can give me about drilling in this material. I can contract for quite a few more wells in this rock, but the drilling is quite hard. Please advise me on the kinds of drills or other tools I need to drill most efficiently through it.

H. C. Vermont

Dear Sir:

Quartzite, like granite, makes for extremely slow drilling. Where joints or cracks, standing at a high angle, occur in the path of a drill, or where boulders are present, the drilling problem resolves itself not only into a question of slow drilling, but also into a question of difficult drilling.

When drilling in quartzite or granite, the drilling tools must be as heavy as conditions will permit. The reason for this is to make it possible to strike the greatest blow, since quartzite not only is extremely hard, but also very tough, and offers great resistance to any kind of cutting tools.

Another important thing in this connection is the shaping of the drill bit. Since the proper dressing for quartzite or granite drilling is quite important, instructions can usually be found in drill tool catalogs put out by drill tool manufacturers. A careful study of these instructions will be helpful.

Where boulders occur, it is usually necessary to resort to dynamite in order to shoot the boulders out of the way. In shooting in quartzite or granite, high percentage dynamite should be used. It is always best to use the least amount necessary to get results, as an excess of dynamite shatters the rock. While this will, in all probability, not affect the future usefulness of the well, the presence of shattered fragments in the hole will be a constant menace to the tools, should the hole be continued on down.

In general, quartzite or granite is not a heavy water producer. Granite wells which show the largest capacity are generally those which penetrate a bed of gravel or till. The reason for this is that the water from the overlying formation will drain down through the joints and cracks, and this will keep the supply in the rock constant.

Likely To Find Water in Area?

Gentlemen:

We have drilled 17 wells on our farm in the past 20 years and only one produces any water. It will just barely supply two houses. We have tried many screens and have drilled as far as 450 feet. The wells have been scattered over a 10 acre square. All of our neighbors have abundant water supplies. Can you give me any addresses of the national water departments? I will appreciate any advice you can give me.

R.A.Y. Michigan

Dear Sir:

Many of the details that influence the presence of underground water can be intelligently determined only by means of an examination of the region in which the well is to be sunk,

(Continued on page 40)

ORANGEBURG®
SP Plastic Pipe

Produced from a superior new-type resin!
Completely slit-proof! Has greater strength!
Engineered to give lasting service!

Made only by Orangeburg

COMPARE THESE ADVANTAGES

- Resists acids, alkalies, salts
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- Lengths to 400', fewer fittings
- Low installed cost, lasting service
- Slit-proof (no "pin-holing")
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Orangeburg *SP* is a new, stronger, flexible plastic pipe that gives superior performance. Takes higher pressures, higher temperatures.

Orangeburg *SP* is the only flexible plastic pipe made from a superior new-type polyethylene resin which took ten years of research to perfect. It is the extremely high molecular weight of this resin which gives Orangeburg *SP* exceptional strength and service life.

PROVED SUPERIORITY—Exhaustive tests prove Orangeburg *SP* Plastic Pipe is *completely slit-proof*—free from "pin-holing"! Exceeds every test known for polyethylene pipe!

IDEALLY SUITED FOR jet well, water service lines, underground sprinkler systems, irrigation, running water systems for farm buildings and livestock watering—and many other installations.

SPECIFY ORANGEBURG SP—made in ½" to 2" sizes, weighs only ⅛ as much as steel, installs faster and at less cost. Opens many new cost-saving applications. Send coupon now for full facts.

Backed by ORANGEBURG - a 64-year reputation for quality.
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Please send descriptive literature on new Orangeburg *SP* Plastic Pipe.

NAME_____

FIRM_____

ADDRESS_____

BITS *from the wit sharpener*

The Frenchman was talking to his English friend, regretting that his marriage had produced no children.

"My wife, she eez—how you say it? impregnable," he said.

"O, I don't think you mean quite that, old man," replied his friend.

"Well, then, she eez—inconceivable?"

"No, that is not correct," came the rejoinder.

"Ah, attendez. She mus' be—unbearable!"

A man wrote to the Credit Bureau —"Sorry this bill has remained unpaid for so long. I've been married and have been on my honeymoon. As soon as I get back on my feet, I'll be in to make a payment."

The candlemaker still has the best job of all. He only works on wick ends.

A real cool cat walked into a diner and asked for some apple pie.

"The apple pie is gone," the waiter informed him.

"Craaazy, man! Craaazy!" the cool one replied. "I'll take a nice thick slice!"

The ocean was only mildly rough, yet several passengers hung miserably over the rail. A kindly old gentleman paused to comfort one of the more wretched of them, and observed. "You must have a weak stomach, sir."

"What do you mean weak!" gasped the sufferer. "Guess I'm throwin' it as far as anybody around here ain't I!"

One day a mother was explaining to her small son that Eve was made from one of Adam's ribs. A week later, the lad walked into the kitchen where the mother was preparing dinner. He looked up at her and said, "Mommy, one of my ribs hurts I think I'm going to have a wife."

The papa bear said "Who has eaten my porridge?" The baby bear said. "Someone has eaten all my porridge." The mama bear said "You guys are nuts. I haven't started to cook yet."

"John dear," said Mrs. Brown, "such an odd thing happened today. The clock fell off the wall, and if it had fallen a moment sooner, it would have hit mother."

"I always said that clock was slow."

"Young man in the back of the room," said the prof, "what was the date of the signing of the Declaration of Independence?"

"Dunno."

"Who was Tom Paine?" asked the prof.

"Dunno."

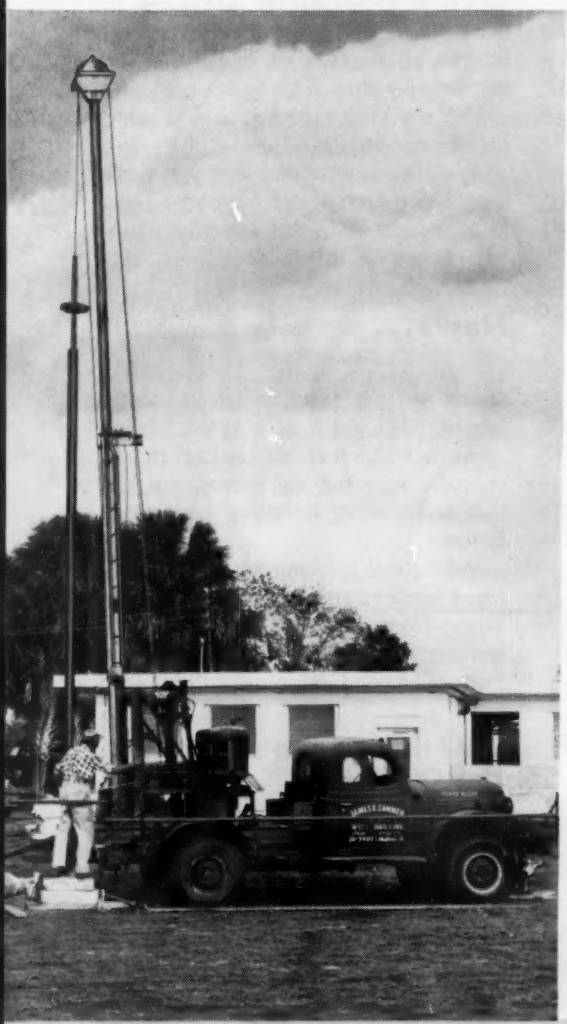
"Well, well," said the prof. "I assigned these questions last Thursday. What were you doing last night?"

"Drinking beer with some of the boys."

"You mean," demanded the teacher, "to stand there and tell me that? How do you expect to pass this term?"

"I dunno, Bud. I just come to fix the steam pipes."

MORE AND MORE DRILLERS ARE TALKING "1-W"



All over the country drillers are talking about the simple, compact combination 1-W with its smooth hydraulic spudding motion and 4-way drilling — by jetting, hollow rod, cable tool, or rotary methods. They're "handling more jobs" because of the 1-W's road-speed quickness . . . "getting more production time" because setups are snappy and simple . . . "putting down hole faster" because change-overs to the most suitable drilling method are made rapidly.

You can enjoy this same kind of satisfaction by making the 1-W and small hole, shallow drilling profits part of your future. See your nearby distributor for all the facts.

94W57C

Bucyrus-Erie Company
South Milwaukee, Wisconsin

BUCYRUS ERIE

FIRST with the FINEST in Water Well Drills

In New Jersey — "Like easy setting up and quick drilling. It's compact enough for any kind of close setup and the telescoping derrick makes it easy to get in and work under wires or trees." Hillwood S. McGinnis & Sons, Absecon.

In New Mexico — "Highly portable, trails easily behind my pickup. I particularly like the fast, smooth hydraulic spudding motion and the cone clutch on the bailing line." A. A. Drilling Co., Albuquerque.

"Like its variable stroke and greaseless bearings . . . real time-savers. The rig is very compact, economical, and easy for one man to handle." Eppa L. Lake, Belen.

In Indiana — "Fits in nicely with our farm co-op business. When our farmer customers run out of water, want a screen change, or need some sort of well service, the 1-W proves very mobile — it gets out there in a hurry to get the farmer's problem solved." Elkart County Farm Bureau Co-op, Goshen.

"Easy to handle . . . gets from job to job in a hurry." Howard B. Sprinkle, Muncie.

"Like anything that makes money the way it does as a one-man machine." Peter D. Bojrab, Fort Wayne.

In Florida — "Like the way I can handle the 1-W by myself. Also the speed in setting up and tearing down." James E. Connor, Maitland.

Mailbag...

(Continued from page 36)

and a careful analysis of observations of other wells put down in the locality.

Without a geologic knowledge of the underlying formations in the area you refer to, we are at a loss to make any specific recommendations or offer advice as to the possible availability of water on the farm you speak of. Since there are producing wells in the same area, it seems logical to assume that a satisfactory supply of water can be obtained if the drilling is carried deep enough.

We suggest that you consult with your state geologist, if you have not already done so, giving him a description of the formations and surface geology, also a careful analysis of observations of other wells put down in the locality. The conclusions of a competent geologist are to be considered as a moderately safe guide in determining the possibility of obtaining water, method of drilling to be employed, etc. The geologist and driller, working together, should bring the desired results.

We also recommend that you write the U.S. Geological Survey Div., Washington, D.C., for any water supply papers on this subject.

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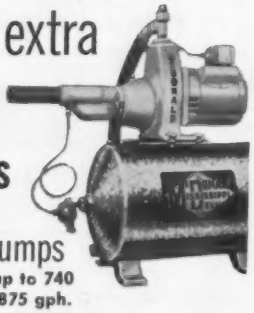


McDonald's
Series 4100
Adapto-Jet pumps
Two sizes, ½ hp., up to 740 gph; ½ hp., up to 875 gph.

A big sales point with suburban and rural home owners.

See your McDonald dealer, or write—

A. Y. McDONALD
Mfg. Co., Dubuque, Iowa
Pumps • Brass Goods
Oil Equipment • Drains

OVER A CENTURY OF SERVICE Since 1866 McDonald YESTERDAY-TODAY-TOMORROW

News...

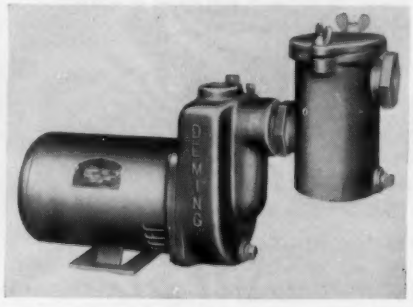
(Continued from page 32)

at an upright position above casing height.

Among the features claimed by the manufacturer for the tubing are low cost and ease of handling and installation.

Additional information about Yardley ClearStream tubing can be obtained from leading distributors or by writing to Yardley Plastics Co., 138 Parsons Ave., Columbus, Ohio.

Self-Priming Pump Line Offered by Deming



A new self-priming line of "Motor-Mount" centrifugal pumps is now offered by The Deming Co., Salem, Ohio. The compact unit is designed for swimming pool and lawn sprinkling service, pit drainage, sump level

control and general liquid handling. It features rapid, automatic self-priming.

Construction features of the "Motor-Mount" include a bronze impeller, stainless steel shaft, mechanical seal and built-in motor overload protection on 2-hp and smaller motors. Bulletin No. 3200 describes the self-priming "Motor-Mount" line.

Survey Report On Kansas Area

Moderate to abundant supplies of ground water are available in Logan County, Kan., for domestic, public supply, irrigation and stock wells, according to a Geological Survey report recently released by the Department of the Interior.

Rocks that crop out in Logan County are sedimentary and range in age from Lake Cretaceous to Recent. The Pierre shale and Niobrara formation of Cretaceous age underlie the county and are exposed along the major valleys. The Ogallala formation of Pliocene age, which underlies the upland plain, was deposited on an erosional surface on the Cretaceous rocks. The undissected upland plain is mantled by wind-blown silt of the Sanborn group. Dune sand and alluvium in small areas in Turtle Creek Valley and the Smoky Hill River Valley are the youngest deposits in the area.

The principal water-bearing formation in the county is the Ogallala formation, which yields moderate to abundant amounts of hard water of the bicarbonate type for irrigation. Sufficient saturated thickness from

THE Brady Jet-type FOOT VALVE gives you all the water your pipes can carry.

★ Eliminates choking
★ Eliminates sticking
★ Diffuser eliminates "spiraling" of water in valve
★ Handles 3 times as much water (with same amount of friction)
★ Employs no springs

. . . and the Brady foot valve costs less than others! For complete information, contact your supplier, or write direct to —

Brady-GUINARD MANUFACTURING CORPORATION
1007 East 18th Street, Muncie, Indiana

which to develop large wells for public supply and irrigation occurs where the Ogallala formation fills ancient stream valleys cut into the underlying Cretaceous rocks.

The report, "Geology and groundwater resources of Logan County, Kan.," was prepared as a part of the cooperative ground-water program in Kansas.

Pending publication as a bulletin of the State Geological Survey of Kansas, typewritten copies of the report may be consulted in offices of the Geological Survey at Room 1242-G, GSA Bldg., 18th and F Sts., NW., Washington, D.C., and Room 111, Lindly Hall, University of Kansas, Lawrence, Kan.; the State Geological Survey, Room 206, Lindley Hall; the Div. of Water Resources, State Board of Agriculture, 700 Kansas Ave., Topeka; and the Div. of Sanitation, State Board of Health, Marvin Hall, University of Kansas, Lawrence.

Long Island Area Well Water Conditions Summarized

Sea-water contamination of the well water of Suffolk County, Long Island, N. Y., has taken place in only a few isolated, near-shore wells, says a Geological Survey report released

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• From Government Storage! • Unused and Guaranteed! • Factory New Condition! • Reconditioned Trucks also Available!

Save up to $3,000 on one of our unused Army trucks. Yes, TWO of our trucks cost LESS than *one* new truck.

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Joseph R. Heidelmeier

Joseph R. Heidelmeier, 52, Washington (Pa.) well driller died July 6, 1957, at a Washington hospital. He had been ill for two weeks.

Heidelmeier owned and operated the Pioneer Drilling and Pump Co. since 1927, and was active in oil and gas well drilling until 1950. He was a charter member of the Pennsylvania Water Well Contractors Assn., and had served this group as a board member for four years and as state president. He was also a charter member of the NWWA.

Surviving are his wife, Florence; his mother, Mrs. Margaret Heidelmeier, Washington; two daughters, Mrs. Merle Butcher and Mrs. Gaylord Plants; one brother, Frank Heidelmeier; six sisters, Mrs. Lena Brehl, Mrs. Norval Coen, Mrs. Elma Young, Mrs. Annie Young, Mrs. David Mosier and Mrs. Richard Chambers, all of Washington, Pa.

Every driller who installs submersible pumps can get many time- and work-saving pointers from this brand-new slide film. Takes you step-by-step through entire installation method. Facts in the film are based on actual experiences of drillers who install Fairbanks-Morse submersibles.

Mail coupon for complete information on how you can view this new F-M installation film. Every driller's helper should see it, too.

Fairbanks, Morse & Co., Dept. D-9,
Chicago 5, Ill.

Gentlemen: When, and where, could I and my helpers see your new submersible installation slide film, "Best Way to Install Submersibles"?

The best time for us would be on .....

.....

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NOTE: All films may be booked for 30 days. Allow 30 days before setting date. (If film is available sooner, you will be notified by F-M.)

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Address.....

City.....State.....

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a name worth remembering when you want the BEST

"Sell Running Water First"

PUMPS • WATER SYSTEMS • GENERATING SETS • MOTORS • SCALES
• MOWERS • MAGNETOS • DIESEL LOCOMOTIVES AND ENGINES

recently. Contamination of some well waters is traceable also to fertilizers, sewage, industrial wastes and salts used for highway maintenance.

Excellent cooling properties of the ground water of Suffolk County are indicated by measurements of water temperature that are tabulated and discussed in the report. These range from 50° to 55°F. for water in wells less than 300 feet deep and from 50.4° to 64°F. for water in deeper wells.

Among other conclusions, the report emphasizes the fact that contaminants other than sea water can cause above-normal concentrations of chloride in ground water and that any suspected sea-water encroachment must be appraised accordingly.

Entitled "Chloride concentration and temperature of water from wells in Suffolk County, Long Island, N. Y., 1928-53," the report discusses the occurrence of chloride and the temperature variations of the ground water of Suffolk County. Tables list more than 1,000 chloride determinations in water samples from 425 wells and 10 irrigation ponds, and 122 temperature

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NEW AND USED WATER WELL CASING

LINE PIPE

ALL SIZES
ALL WTS.

IRRIGATION PIPE

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OIL WELL CASING AND TUBING

LOTS OF 300' OR MORE

FREE QUICK DELIVERY — YOUR YARD OR JOB SITE
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WATER WELL CASING AND PIPE OUR SPECIALTY

measurements from 82 wells.

Copies of the report may be examined at the Geological Survey, 230 Old Country Rd., Mineola, N. Y., and 1033 G.S.A. Bldg., 18th and F Sts., N.W., Wash., D. C.; at the Suffolk County Water Authority, North Windsor Ave., Brightwaters, N.Y.; the Suffolk County Dept. of Highways, Port Jefferson, N. Y.; and the New York State Water Power and Control Comm., 147-09 Archer Ave., Jamaica, N. Y., or 110 State St., Albany, N. Y.

San Francisco Bay Area Water Needs Described

If the San Francisco Bay area continues its present population growth and increasingly large per-capita use of water, more and more of its water requirements will have to be imported from outside sources, according to a report released recently by the Geological Survey.

The huge metropolitan area of America's seventh largest city, with a population of more than 2,240,000 persons, has already developed local sources, including wells and small streams, to about the maximum extent possible, and is drawing on supplies from a considerable distance, including water from as far away as the Hetch Hetchy Reservoir in Yosemite Park.

The Survey report, Circular 378, describes in detail the quantity and quality of water presently and potentially available to the metropolis and adjacent cities and towns in a 4,400-square mile area bordering San Francisco, San Pablo and Suisun Bays.

More than 700,000 acre-feet of fresh water per year (equal to about 630 mgd) is used by the people in the area for domestic, agricultural,

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★ Provides greater elasticity for shallow drilling.

★ Enables drilling tools to drop farther for a given stroke of the machine and strike harder, faster blow.

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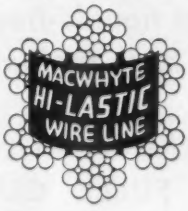

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1113R

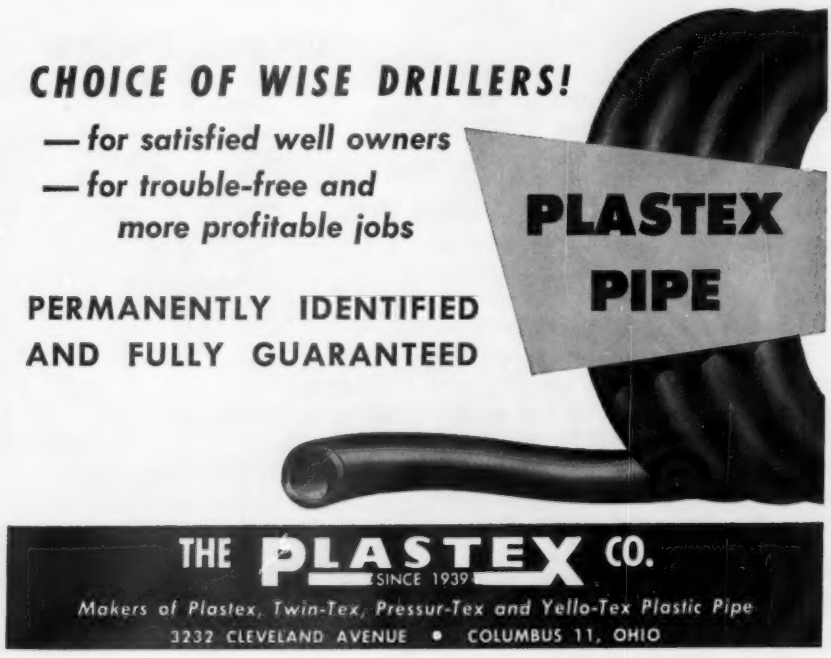
commercial and industrial purposes. About 300,000 acre-feet per year, mainly ground water from alluvial deposits of sand and gravel, is used to irrigate more than 160,000 acres in the Santa Clara Valley, the Alameda Plain, Livermore Valley and in other valleys.

Those ground-water basins which have not been completely developed are of such small size as to preclude their use as sources of additional large withdrawals over long periods. Water used for purposes other than irrigation is mainly from streams, lakes and reservoirs, and averages 130 gpd per capita, including more than 230,000 acre-feet per year imported from outside the area.

Sources of water within the San Francisco Bay area include several groups of wells, Alameda Creek, Napa River, Coyote Creek, Guadalupe River and smaller streams. The water from these sources is of satisfactory chemical quality for most purposes.

Water from the streams usually contains no more than 300 parts per million (ppm) of dissolved solids and no more than 200 ppm hardness expressed as calcium carbonate. Water from Alameda Creek has a higher content of dissolved solids and greater hardness, as does also the water from wells in several parts of the area. High concentrations of sodium chloride or boron limit the uses of water from some ground-water sources.

The report is titled "Water Resources of the San Francisco Bay Area, Calif." (Geological Survey Circular 378). Requests for a copy of the report, obtainable free on application to the Geological Survey, Wash. 25, D. C., should identify the report by circular number and title.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Young...

(Continued from page 21)

which is much harder than the sandstone at the surface, shale is again encountered. The water supply is sometimes found in this stratum. Generally, however, the water is not found until several succeeding alternate layers of shale and sandstone have been penetrated. The wells drilled in the area are almost all six inches in diameter.

"In North Carolina," Young stated, "the wells are put down mostly through blue granite and sandstone, to average depths of 150 feet. We run into some pretty tough drilling in that area."

Any interesting fishing jobs? Young had one to relate that proved profitable to him as well as interesting.

"Some time ago," he began, "another driller in our area who was working on a farm well lost a complete string of tools at 96 feet. After he had fished for them unsuccessfully for several days, he gave up on the job. Several years later, the owner of the farm asked me to come out and either drill another hole or attempt to finish the abandoned one. I looked the well over and agreed to take the job. When I informed the driller who had given up that I was going to attempt to finish it, he laughed and told me that if I was able to get the string of tools out of the hole I could keep them.

"I first tried a combination socket, sinker bar and set of jars in an attempt to get the tools out. But there was just no budging them. Then I decided to try something I had heard of but had never tried myself. I dumped two pounds of carbide into the hole and

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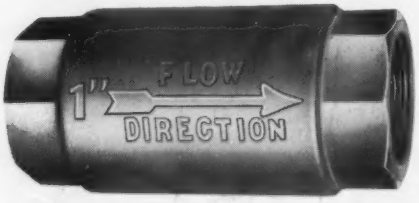

Foot Valve
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WHITE FLOMATIC CORPORATION Hoosick Falls, New York

continued to jar the lost tool string. All of a sudden, there was a big explosion that knocked me and my helper right off the drilling platform. But that turned the trick, and with just a little more jarring, we retrieved the lost tool string. The tools were still in excellent condition.

"I drilled the well down to 128 feet and brought in a good water supply. The owner paid me for the complete well, but I paid the other driller his share for having drilled the first 96 feet of hole.

"We bring in some artesian wells around here from time to time, too," Young stated. "A couple of flowing wells we recently drilled had sufficient pressure to force water into the house and barns on the farm where they were drilled."

The Driller visited two of the jobs Young's 20-Ws were working on last March. One of them was just getting started on a home well near Crossville. James Smith was at the controls of the drill, with Gene Smith acting as his helper. They had hit sandstone at three feet and expected to go into shale at 50 feet.

The other 20-W was working on a well for a home water supply atop Palmer Mountain, about 20 miles north of Chattanooga. It was typical of the locations continually encountered in the area. Getting to the job site required driving along miles of winding roads which went up the side of the mountain.

Driller Romy Davis was operating this drill; Richard Bates was acting as his helper. The 6-in. tools were pounding into a shale stratum at a depth of 136 feet.

Families tend to run large in the Tennessee area where he lives, and

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DEACON GAS FIRE PRODUCTS CORP.

We furnish pipe made by ELECTRIC RESISTANCE WELDED process which assures absolute uniform wall thickness — The most important feature in water well casing.

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I.D.		O.D.
4 1/4"	Random	4 1/2"
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6"	Half	6 5/8"
6 1/4"	Lengths	6 5/8"
6.538		7"
8 1/4"		8 5/8"

American & Huntingdon Sts., Phila., Pa.
Phone GArfield 5-1000

Young and his wife, Lois, are no exceptions to the trend. They have 10 living children, ranging in age from 7 to 24.

Through his drilling activities over a comparatively large territory for 30 years, Orlie Young has come to know most of the countryside and most of the people living there as well. And he will get to know them better, for he has no intentions of quitting for a long, long time.

Iron Test...

(Continued from page 23)

the chemicals and equipment are best obtained from a chemical supply house. If none is readily available, a doctor or druggist will be able to obtain the materials necessary for the test. Then practice a few times to get the feel of the test. The photographs and following text will make clear any terms which at first are unfamiliar. Read the test through once to get the general idea before actually studying the procedure.

Procedure Outlined

1. Measure out 100 cc of the water to be tested and transfer it to a Nessler tube.
2. Using the small vial, add 5 cc of Solution #4.
3. From the dropper, add 2 drops of Solution #2. If the pink color does not last at least 5 minutes, add a couple more drops of Solution #2 until it does. (This step converts all the ferrous iron present to the ferric state so a color will develop.)
4. Using the small vial, add 5 cc of Solution #3. Stir with a glass rod. The color will develop here.
5. Compare the color developed

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Model No. 13-W
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Any farmer or rancher without an ample supply of water for his house and herd is likely to worry about dry spells, the health of his livestock, fire protection for his home. You, Mr. Driller, can end these worries for your customer by recommending and installing a reliable JENSEN WATER SYSTEM. It provides all the water needed day or night. A JENSEN WATER SYSTEM is low in cost — dependable in performance!

JENSEN WATER SYSTEMS

Made by JENSEN BROS. MFG. CO., INC., Coffeyville, Kansas

with a standard sample prepared as follows:

a. add 100 cc of distilled water to a Nessler tube.
b. add 5 cc of Solution #4.
c. add 5 cc of Solution #3.
d. Using a buret, add 0.2 cc of Solution #1.

Stir all the while with the glass rod —until the color of the sample and the standard match.

The number of cc of Solution #1 used to match the sample equals the parts per million of iron in the water.

For example, if 5.4 cc of Solution #1 was used, the water tested has 5.4 ppm of iron. If 23 cc are used, the water has 23 ppm.

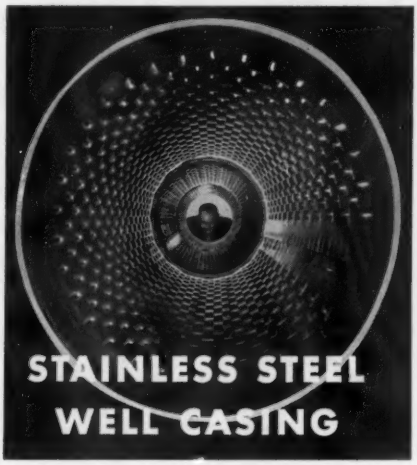
In some localities, people prefer to speak of grains per gallon, rather than parts per million. In this case, divide the ppm by 17 to get grains per gallon.

Thus, 23 ppm would equal 23/17 or 1.4 grains of iron per gallon.

For familiarization, it is a good idea to get several equal volumes of water and add varying amounts of Solution #1. Then, when color develops in all the samples, it will vary greatly.

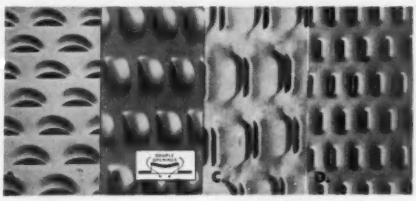
In fact, if you will run all your tests in a shop and not in the field, it might be a good idea to get 8 or 9 Nessler tubes and make up standard samples containing 5-10-20-30-50-60-80-100 ppm of iron. Stopper the flasks after the color is developed; then merely compare any unknown sample by holding it against the various tubes until it matches one tube the best. This completely eliminates step 5 in the procedure.

After a couple of "dry runs" to get the feel of things, you should be able to tell your customer how much iron is in his water about ten minutes after you get the sample.



Corrosion is stopped by welded stainless steel casing. If acid or alkaline soil conditions present a problem...then stainless steel well casing is your permanent solution.

4 Perforation Styles



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Louvre down keeps fine sand out. Very popular for gravel packed rotary drilled wells.

B. Double Louvre
Up to 50% more perforated area. Up to 8 ga. thickness, min. diam., 10". Very strong.

C. Twin Flow
Water enters from opposite sides of perforations ½" to 1" long, 1/16" to ¼" deep.

D. Standard
Popular for fine sand at moderate depth. 3' to 21' lengths, as desired.

Let us solve your well casing problems.
We fabricate to your needs, stainless, monel, Everdur, black or hot dipped galvanized mild steel. Built for field welding, bolting or riveting.

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All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: $1.00 per line. Minimum charge $4.00. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date — 10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

20-W one-piece derrick with cables and some tools; new engine installed approximately one year ago; mounted on truck. Inquire Ed Kranz, 5214 W. Villard St., Milwaukee, Wis.

One Bucyrus-Erie 20-W with telescopic derrick; mounted on 1950 two-speed axle truck; one drill stem, one swivel socket tool wrench, bailer included; like new.

One Bucyrus-Erie 20-W with one-piece derrick; mounted on 1952 Chevrolet two-speed axle truck; necessary tools and cables with machines; rig and truck like new. Please don't write, phone: Clarence Acker, 3934 South 41st St., Milwaukee 15, Wis. Phone ORchard 2-5667.

One 20-W Bucyrus-Erie machine, one year old, one-piece derrick, excellent condition, mounted on a 1951 Dodge with 2-speed axle; 500′ of ⅝″ and 500′ of 7/16″ cable and complete tools. Harvey Acker, Hales Corners, Wis. Do not write; phone ORchard 2-5667.

#42 Sanderson Cyclone drill, 1 year old, used very little, mounted on 1947 Chevrolet truck. 700′ of 5/8″ drill line and 3/8″ sand line. Price: $3900. Terms possible. Gillett Well Drilling, Gillett, Wis. Phone 42F41.

DRILLS FOR SALE

22-W Bucyrus-Erie, 1955 model, equipped with tool guide, spooling device, casing reel, blower, starting equipment and 40′ derrick, power raised; with 6″ tools and lines; A-1 condition throughout. Price: $4900. George Bassler, Sturges Ridge Rd., Wilton, Conn. Phone POrter 2-3243.

22-W Bucyrus-Erie 1948 model, mounted on GMC 6x6 2½-ton truck, good condition, 500′ of ¾″ drill line and ⅝″ sand line. Price: $3500.

Loomis #32 drill, 1956 model, mounted on 1954 6x6 2-ton truck, 500′ of ¾″ drill line and ⅝″ sand line. Price: $6000.

W. Sammons, Rt #4, Oshkosh, Wis. Phone Stanley 5153.

22K Star Keystone mounted on 1947 Studebaker with catheads, casing reel, 45′ telescoping derrick, 60 hp Allis-Chalmers motor, cable, sand line, casing line, string 4″ tools, 3″ drive block, also 1 8″ bit, 2¼x3¼; 12′, 4″ bar, 2¼x3¼; 1 set jar and socket, 2¼x3¼; new, used only on one job. Complete for $4250. Will sell less tools if desired. Wm. Mantyla, Rt. #4, Stillwater, Minn. Phone Cottage Grove 2311.

Reich 600 rotary, 18 months old, mounted on IHC L-190 heavy-duty truck, 10-wheeler, powered with Cummins diesel engine, 150 hp with power take-off drive; equipment includes air compressor, mud pumps, dust collector, electric hoist and complete tool equipment to drill 6″ holes, bits 350′-3½″ heavy-duty drill rod, etc. Will sell complete: $35,000. Harolds Artesian Well Co., 45 Berry St., Torrington, Conn. Phone HUnter 9-5588.

Bucyrus-Erie 24-W, equipped with cat heads, spooling device and casing reel, mounted on 6-wheel drive truck, with or without tools and equipment. Badger Well Drilling, 6125 W. Fond du Lac, Milwaukee 16, Wis.

#16 Ideco, 1948 model, good for deep wells up to 1000′, 700′ of ⅝″ drill line and ⅝″ sand line. Price: $2000 less truck. J & J Well Drillers, Elkhorn, Wis. Phone PArkview 3-3488.

DRILLS FOR SALE

USED BUCYRUS-ERIE DRILLING MACHINES

22-W's 24-L's 28-L's

Other Models Occasionally ! Turnover so great all models not always available.

Phone or write for particulars on our current stock.

Everything for the cable-tool drilling contractor.

CABLE TOOL SUPPLY COMPANY
Bucyrus-Erie Distributor
Princeton Indiana
Phone: FUlton 5-4831

21-W drill in very good condition, mounted on 1940 International truck, drill equipped with 32′ one-piece derrick, 6″ tools and lines. Price: $2000. Al Cerak, White Plains, N. Y. Phone 9-9530.

Keystone 70 drill, Continental motor and starter, bull reel, sand reel, steel derrick, power derrick hoist, about 600′ drilling and sand lines. Drill mounted on GMC 2½-ton, 6 x 6, 1942 truck. Tools for 6″ hole. 180 amp. Lincoln arc welder, 75′ leads. 1951 1-ton Ford truck, stake body. Oxy. acet. cutting torches. Assortment hand tools. All equipment A-1 condition. Price: $5000. Rogue Valley Drilling Co., 885 Shafer Lane, Medford, Ore.

1955 Speedstar, equipped with jetting pump, mounted on 1949 cab-over-engine Ford 2-ton truck, good condition. Elwood McGinnis & Sons, 502 New Jersey Ave., Absecon, N.J.

22-W Bucyrus-Erie drill, 1948 model, powered by Hercules engine, mounted on GMC truck with 2-speed axle, overhauled and newly painted; complete with casing reel, tool guide, rubber cushioned sheaves and one cathead. Priced reasonably. Moore & Siegal, Shullsburg, Wis.

Bucyrus-Erie 21-W with LeRoi engine, 32′ one-piece derrick, tool guide, line guide, pipe braces, Bucyrus-Erie power derrick hoist, electric starter and cat walks; mounted on 1949 Mack truck, machine overhauled with new bearings, etc. Jan. 1957; machine and truck in good operating condition and working every day. Located in northern Ill. Price: $2800. Box 698

DRILLS FOR SALE

1950 Bucyrus-Erie 20-W, mounted on 1947 LWB Dodge truck, equipped with casing reel, starter, new Allis-Chalmers power unit and 32′ one-piece derrick. R. M. Marcrum, Scottsville, Ky. Phone Main 2-5156.

#35 Cyclone drill, 1956 model, with telescoping derrick, power hoist, jet pump, tool guide, cable for solid tools, 24 hp Continental engine, electric starter, mounted on good 1949 Ford truck: $3200. A complete line of jetting tools, reasonable; these tools and equipment like new. Carl Boyer, Rt. 2, Reed City, Mich. Phone Tennyson 2-9407.

Two 20-W's, 2-3 years old, telescoping derrick, with cable, truck mounted, both machines and trucks in excellent shape.

One 35-W Armstrong drilling machine with cable, recently overhauled and painted, International motor, excellent condition, semi-trailer mounted with Chevrolet truck in good condition.

These machines are priced to sell. Contact Wilson & Beemer Supply Co., Albert Lea, Minn., phone 6412; or Ames, Iowa, phone CEdar 2-2573.

Keystone 50, mounted on Int. truck, two drill stems 4″, 6″, two 10″-12″ bits, jars, excellent condition. V. E. Slappey, 606B N. Jefferson St., Albany, Ga.

Bucyrus-Erie 60-L, mounted on 1953 Ford F-800 truck, drill equipped with Buda gasoline engine, casing reel, spooling device, tool guide and blower. Price less truck, tools and lines: $9000. Truck available at extra cost. Located in Conn. Box 700

Bucyrus-Erie 1946 21-W drill, mounted on 1940 Chevrolet truck, complete with tools and lines for 6″ and 8″ holes, jarring tools; also 1949 1-ton Chevrolet pick-up truck and pipe trailer. Jacob Carian, 7315 W. Greenfield Ave., Milwaukee 14, Wis. Phone SPring 4-3367.

One 28-L Bucyrus-Erie spudder, 1949 model, machine in above average condition with new bull reel drums and lining; also guy lines, casing line, tool crane and A-frame attachments. Contact the Buckeye Supply Company, 18 Harrison St., Zanesville, Ohio. Phone GL 2-3641.

DRILLS FOR SALE

50 Keystone, 1954 model, mounted on 1949 KB6 Int'l., rubber shock, tool guide, blower, 600′ of ¾ and ⅝″ lines, two 6, 8, and 10″ bits, 6 and 8″ bailers, stem, jars, socket, wrenches, track and jack. A-1, ready to go: $4500. A. H. Hughes, 108 W. Main, Jacksonville, Ark. Phone LIberty 4-2432.

Sparta drilling rig with 34′ steel derrick, mounted on semi-trailer 1939 Chevrolet truck, 400′ of ⅝″ drilling cable, including string 4″ tools. Price: $800.

Shop-built steel drilling rig, with 30′ derrick, 300′ drilling cable and string 3″ tools, mounted on 1939 GMC truck. Price: $400. Walter M. Garrelts, McHenry, Ill. Phone McHenry 2101.

71 Speedstar spudder, mounted on GMC truck. C. W. Kendall, R.R. #1, Vincennes, Ind. Phone 3972-M.

1—1953 Model 20-W drill, mounted on a 1947 Ford V-8 truck.

1—Bucyrus-Erie 21-W drill, mounted on a 1939 Dodge truck.

2—22-W drills.

1—71 Star mounted on an International truck, 1941 model.

1—71 Star mounted on a 1947 Chevrolet truck.

1—Late 1955 Model 50 Keystone, mounted on a 1948 Chevrolet truck.

1—1956 Model 60-L drill, fully equipped with casing struts, lines, tools, 2-winch trucks, dog house and light plant.

R. R. Long Co., R. R. 1, Mound Road, Jacksonville, Ill. Phone CHestnut 5-2613.

Two Howell well rigs, one with new International engine and other with reconditioned John Deere engine; 1954 Studebaker 1-ton pickup; 2 complete strings 4″ tools, one string 3″ tools; other 3″ and 4″ bits and bars; approximately 1000′ of 4″ black line pipe. Jake Baierl, 624 Koehler Rd., St. Paul 17, Minn.

1954 22-W, mounted on Chevrolet truck, machine has 40′ telescoping derrick, derrick hoist, casing reel, equipped with 800′ of drill and sand line and 175′ of casing line. Machine is in excellent shape and cannot be told from new. Contact either: WILSON & BEEMER SUPPLY CO., Albert Lea, Minn., or Ames Iowa.

DRILLS FOR SALE

No. 71 Star drill on 1947 two-ton Chevrolet truck, power hoist, new top on the 38′ mast, Hercules engine completely overhauled, all new bearings and complete overhaul on entire machine, top notch condition throughout, with cable. Asking $3500. Drill is now working; worth looking at. Larson-Becker Co., Phone 1316 or 1317, Batavia, Ill.

1500 Failing, long mast, kelly, heavy duty, 52 tandem truck: $6750; 1000 Mayhew 51 F-7; 1000-A Failing; Carey 3-A; Joy 37. Fred Butler, Box 481, Pueblo, Colo.

AUCTION SALE: We will sell at Public Auction on Wednesday, September 18, 1:00 p.m., the following well drilling equipment: 1—Failing rotary drill rig, model 750, Failing shop #65, mounted on a 1948 Ford truck; 1—#160 Howell drill rig mounted on a 1948 2-ton Reo truck, together with drill stems, drill bits, and other miscellaneous equipment for each rig; also, 1950 1½-ton Chevrolet truck long-wheel base with flat bed. All equipment will be positively sold. Property can be seen on the L. C. Rummells farm 1 mile east and 1 mile south of West Branch, Iowa. First State Bank, West Branch, Iowa.

2—Model 27-T blast hole drills, gasoline powered, crawler mounted, complete with tools and lines.

1—#8 Bit dresser equipped to dress 7″ bits.

Ben Tully & Sons, Poyntelle, Pa. Phone Pleasant Mount 2658.

1950 Model 22-W Bucyrus-Erie drill, mounted on a 1946 1½-ton Chevrolet truck, equipped with ¾″ drill line and ⅝″ sand line, complete with 6″ string of tools, Good condition; owner will take $3500. B. L. Davis, 2839 Derrough Ave., Melrose Park, Ill. Phone GLadstone 5-3884.

50 Keystone, mounted on 1½-ton 1948 Chevrolet: $4000 less tools.

No. 10 Ideco, trailer mounted: $2250 less tools. Both excellent condition. Tools can be purchased at extra cost. Robb & Riggs, Sedalia, Mo. Phone 2607J or 4183W.

Sparta #30 drill with 40′ steel derrick, mounted on 1935 2½-ton Dodge truck. A-1 condition: $400. Ray Van Hercke, Little Falls, Minn.

DRILLS FOR SALE

Model 42 Cyclone well drill, on 1949 Chev., excellent condition, cables and tools included. Priced for quick sale; drills 4¼" and up. Lawrence C. Potts, Rt. 5, Defiance, Ohio. Phone Defiance 3-1132.

Shurhit drill mounted on 1946 Chevrolet 1½-ton, 2-speed axle truck; has Bucyrus-Erie shock top and Chalmers power unit; also all hollow rod tools for 2" and 3" work. Charles Archer, Elsie, Mich.

ONE 22-W, A-1 CONDITION, CHEV. TRUCK MOUNTED, FULLY EQUIPPED, NOW OPERATING. $4800. PHONE 6831, QUITMAN, GA.

1954 55A Speed Star drilling machine, 35' mast, tool guide, casing reel, electric starter, blower, complete set 6" drilling tools, lines and wrenches; mounted on 1949 2-ton Chev. truck. Price: $4000.

1950 55A Speed Star drilling machine, 33' mast, electric starter, blower, casing reel, complete set of 6" drilling tools, lines and wrenches. Price $2500.

These rigs are in excellent condition and ready to go. Write or call John Harden, Rt. 2, Fern Creek, Ky. Phone Fern Creek 3276.

Keystone 40, 1950 model Ford power unit with 3-speed transmission and reverse; mounted on IHC K 7 truck; catheads, tool guide and blower; derrick with rubber shock absorber head; machine and truck excellent condition. Price with cables less tools: $4000. J. L. Woodburn, R. #1, Budd Lake, N. J. Phone NEtcong 2-1388.

50-Keystone, less than 1 year old equipped with 6-cylinder Continental power unit, tool guide and 40' telescoping derrick; mounted on good army 6 x 6 truck; complete outfit in excellent condition and can be purchased with lines but less drilling tools for $6500.

Edward Vetosky, 249 Van Ness St., Newburgh, N. Y. Phone Newburg 1170.

MISCELLANEOUS FOR SALE

Used drilling tools, 2x3-7 API swivel wire rope socket, drill stem 4¼"x14' and 3 drill bits 6" hole; practically new. Also 3 used 6" drill bits and used jars for 6" hole. Gillett Well Drilling, Gillett, Wis. Phone 42F41.

MISCELLANEOUS FOR SALE

FORD MODEL JD-1025 GASOLINE ENGINE with radiator-flywheel, ring gear and starter. $200.

All Prices f.o.b. South Milwaukee, Wisconsin.

Bucyrus-Erie Company, South Milwaukee, Wisconsin.

1—Open-type Dempster rotary table with 13¼" opening in good order. Price: $100. 1—300# Acme bit ram, like new, used once. Price: $75. Geo. Harding, 1704 J St., Auburn, Neb. Phone evenings 336 after 6 P. M.

Write today for list of drilling and fishing tools, everything for cable tool drilling, state sizes you want to buy, save big money on wire lines. Tri State Supply, Box 827, Parkersburg, W. Va.

POSITION WANTED

I will be available for a position January 1, 1958; desire southern location with a reliable company engaged in irrigation and industrial work; qualified in cable tool drilling, screen wells, development, design, well and water treating, procurement of materials, sales and service of turbine and submersible pumps; single and multi-engine land pilots rating; 30 years in business; selling business; middle-aged; married; foreign employment considered; will request references; salary commensurate with qualifications. Box 699

Water well driller wishes overseas work, 5 years experience with rotary and 1 year cable tool, large and small wells, sober and reliable. Route 2, Box 209, Lake Worth, Fla.

POSITION WANTED

Driller, 40 years experience available for foreign service as instructor-supervisor. Several years in Turkey. Box 686

HELP WANTED

Cable tool drill manufacturer is seeking a service engineer for foreign work. He must have cable-type water well and blast hole experience. He will train native operators. Want American citizen with good Spanish. Must be willing to travel extensively and constantly. Write full particulars and send a recent snapshot. Box 697

Wanted an experienced well driller at once; must be sober and honest. Write or phone. H. E. Shirley, Stephenson, Va. Phone Mohawk 2-8375.

WELL BUSINESS FOR SALE

Complete units for sprinkler irrigation systems, including pipes, pumps, etc. Write AGOPIAN Co. (Aram Agopian & Mohamed Amin Helmy), 13 Soliman Pasha St., Cairo, Egypt.

One used casing reel and derrick sheave for 1956 20-W Bucyrus-Erie drill. Ray Van Hercke, Little Falls, Minn.

EQUIPMENT WANTED

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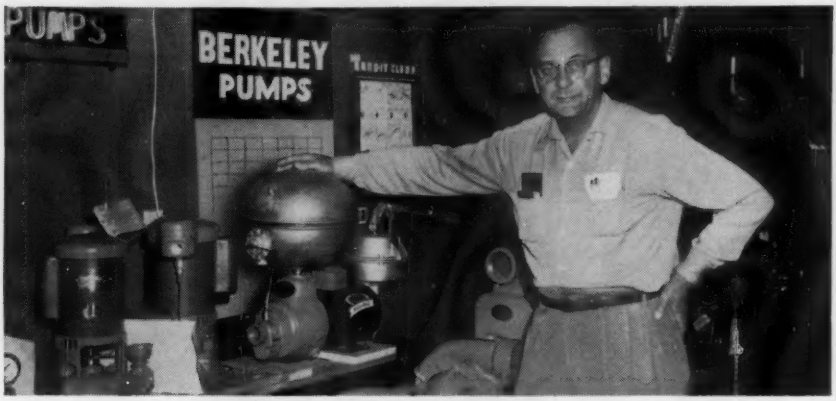

says Lambert Munz of Schmidt Pump House, Yuba City, Calif.

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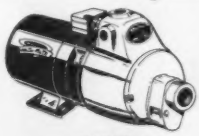

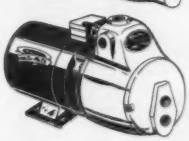

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